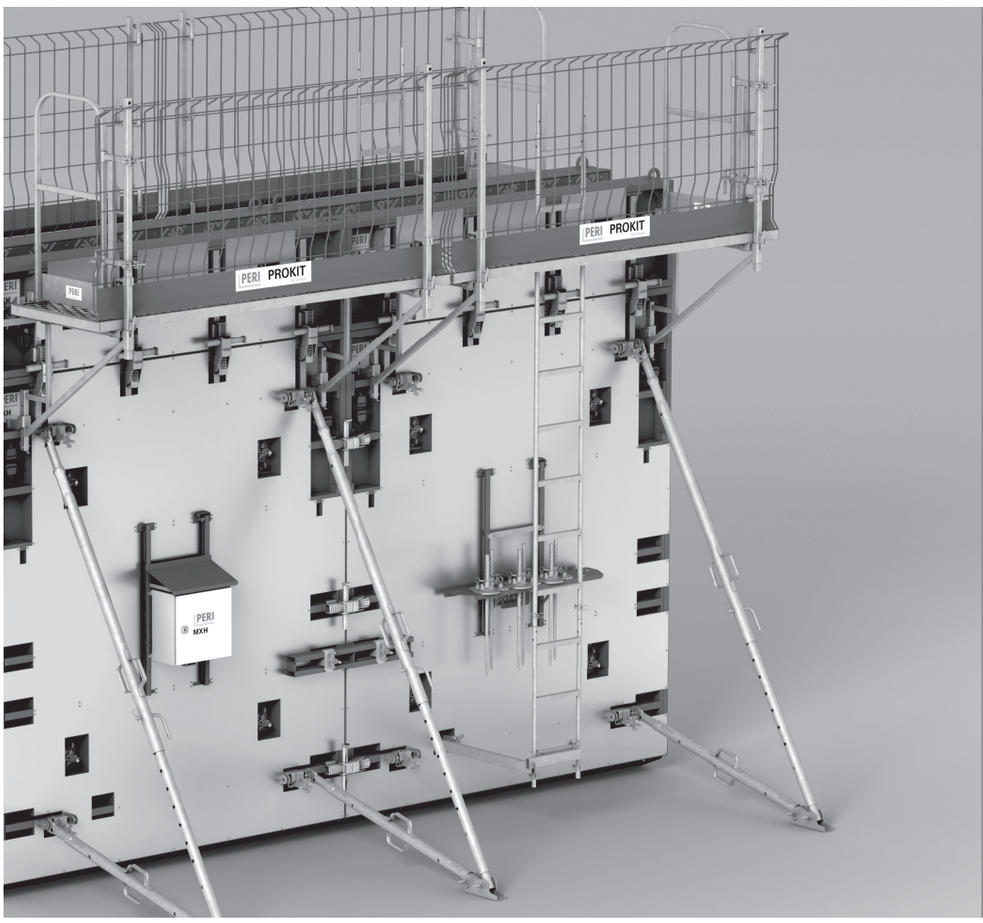
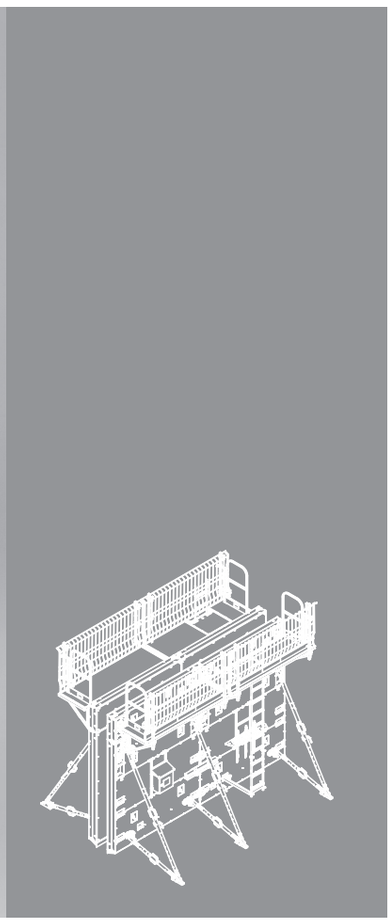
MXH
Heated Panel Formwork

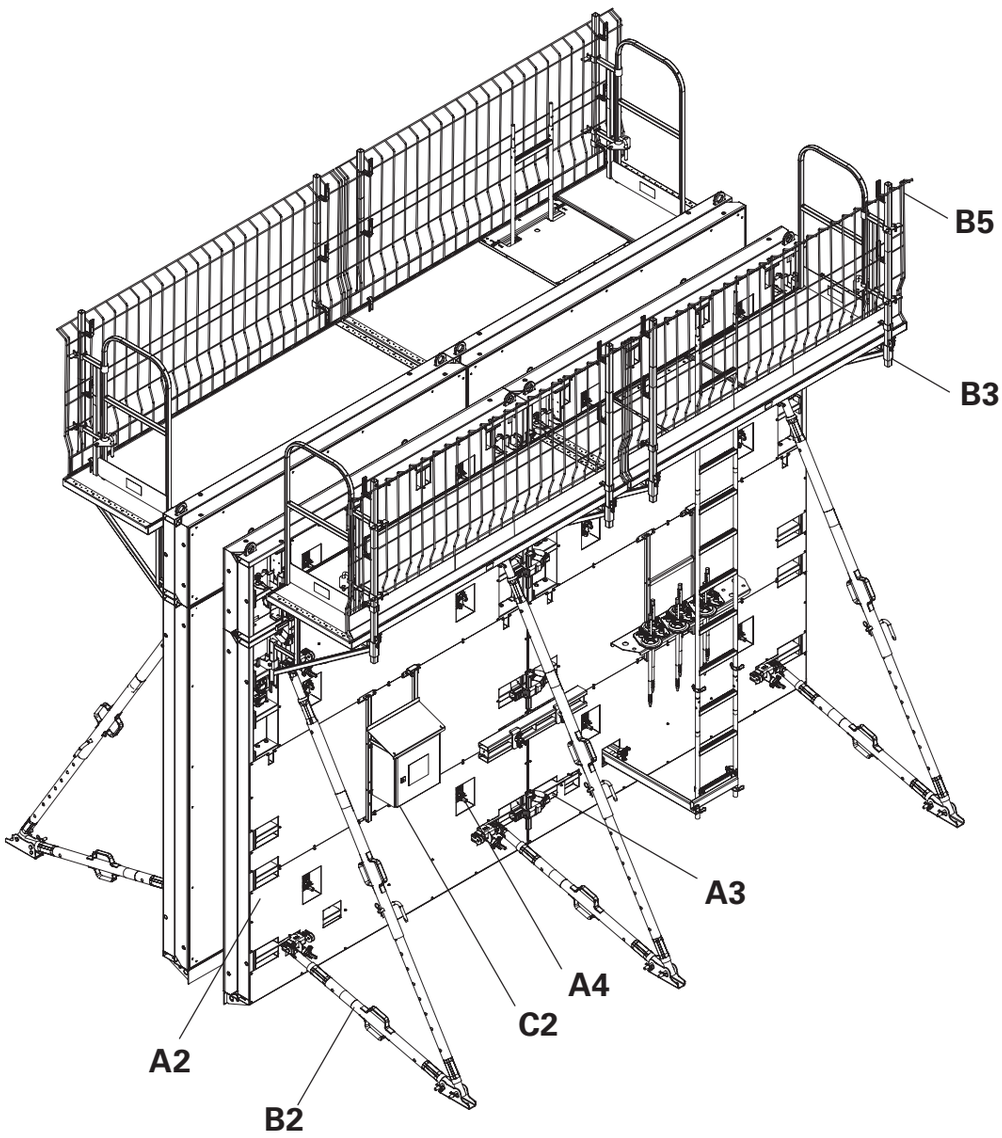
Instructions for Assembly and Use – Standard Configuration – Issue 02/2018





Overview

Main components



A2 Panels
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Load-bearing point


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Hot surface


Safety gloves


Personal protective equipment to prevent falling from a height (PPE)


Misapplication

Dimension specifications
Dimensions are usually given in mm. Other units of measure, e.g. cm, are specified in the illustrations.
Load details are usually given in kg. Other measurement units, e.g. t, are specified in the illustrations.

Conventions
- Instructions are numbered with: 1. ....., 2. ....., 3. .....
- The result of an instruction is shown by: →
- Position numbers are clearly provided for the individual components and are given in the drawing, e.g. **1**, in the text in brackets, for example (1).
- Multiple position numbers, i.e. alternative components, are represented with a slash, e.g. **1 / 2**.

Arrows

→ Arrow representing an action

Presentational reference

The illustration on the front cover of these instructions is understood to be a system representation only. The assembly steps presented in these Instructions for Assembly and Use are shown in the form of examples with only one component size. They are valid accordingly for all component sizes contained in the standard configuration.

For a better understanding, detailed illustrations are partly incomplete. The safety installations which have possibly not been included in these detailed drawings must nevertheless still be available.

Target groups

Contractors
These Instructions for Assembly and Use are designed for contractors who either
- assemble, modify and dismantle the formwork system, or
- use it, e.g. for concreting, or
- allow it to be used for other work operations, e.g. carpentry or electrical work.

Construction site coordinator
The Safety and Health Protection Coordinator*
- is appointed by the client,
- must identify potential hazards during the planning phase,
- determines measures that provide protection against risks,
- creates a safety and health plan,
- coordinates the protective measures for the contractor and site personnel so that they do not endanger each other,
- monitors compliance with the protective measures.

Competent persons
Due to the specialist knowledge gained from professional training, work experience, and recent professional activity, the competent person has a reliable understanding of safety-related issues and can correctly carry out inspections. Depending on the complexity of the test to be undertaken, e.g. scope of testing, type of testing or the use of a certain measuring device, a range of specialist knowledge is necessary.

Qualified persons
Formwork systems may only be assembled, modified or dismantled by personnel who are suitably qualified to do so. For the work to be carried out, the qualified persons must have received instructions** covering at least the following points:
- Explanation of the plan for the assembly, modification or dismantling of the formwork in an understandable form and language.
- Description of the measures for assembling, modifying or dismantling the formwork.
- Designation of the preventive measures to avoid the risk of persons and objects falling.
- Designation of the safety precautions in the event of changing weather conditions which could adversely affect the safety of the formwork system as well as the persons concerned.
- Details regarding the permissible loads.
- Description of any other risks that are associated with the assembly, modification or dismantling procedures.

In other countries, ensure that the relevant national guidelines and regulations in the respective current version are complied with!

* Valid in Germany: Regulations for Occupational Health and Safety on Construction Sites 30 (RAB 30)

** Instructions are given by the contractor himself or a competent person selected by him.

Additional technical documentation

- Instructions for Assembly and Use:
  - MAXIMO MX 15
  - MAXIMO MX 18
  - MAXIMO MXK Bracket System
- Instructions for Use:
  - Instructions for Use: Lifting Gear “Combi” MX
  - Instructions for Use: Lifting Hook MAXIMO 1.5 t
  - Instructions for Use: Test Device MXH
- PERI Design Tables - Formwork and Shoring
- Technical Data Sheet for Anchor Bolt PERI 14/20 x 130

Introduction

Intended use

Product description
PERI products have been designed for exclusive use in the industrial and commercial sectors by qualified personnel only.

MAXIMO MXH combines the MAXIMO Wall Formwork System with the MXH Heated Formwork.
The heating prevents the temperature of the concrete from falling when the outside temperature is low. This allows the hydration process to take place.

Technical data

Power supply:
3-phase alternating current 400 V / 50 – 60 Hz
Connected load max. 7,200 W
Maximum current consumption 12.5 A

Connection
CEE plug 400 V, 16 A, 6h

Main switch
3-phase, mechanical separation (62) +N

Safeguards
3 x 16 A, Tripping Characteristic B (69)

3-phase residual-current protection device 25 A (68)
Conventional tripping current 30 mA

Instructions on use

The use in a way not intended according to the Instructions for Assembly and Use, or any use deviating from the standard configuration or the intended use represents a misapplication with a potential safety risk, e.g. risk of falling.

Only PERI original parts may be used. The use of other products and spare parts is not allowed.

Changes to PERI components are not permitted.

Cleaning and maintenance instructions

In order to maintain the value and operational readiness of the formwork materials over the long term, clean the panels after each use.
Some repair work may also be inevitable due to the tough working conditions. The following points should help to keep cleaning and maintenance costs as low as possible.

Do not spray release agent on the frame parts but spread by means of a cloth. This allows easier and faster cleaning of the formwork. Apply the concrete release agent very thinly and evenly! Ensure that the release agent does not come into contact with heating wires, cables, support fabric and insulating foam.

Spray the rear side of the formwork with water immediately after concreting; this avoids any time-consuming and costly cleaning operations.

When used continuously, clean the panel formlining immediately after striking using a scraper, brush or rubber lip scraper. Important: do not clean the heating elements with high-pressure equipment; this could damage the electrical installations.

Do not drill into, saw or nail the heating elements.

Close all unused tie holes with plugs; this eliminates any subsequent cleaning or repair work. Tie holes accidentally blocked with concrete are freed by means of a steel pin from the rear side.

Do not store anything on the heating elements.

Never clean powder-coated components, e.g. panels and accessories, with a steel brush or hard metal scraper; this ensures that the powder-coating remains intact.

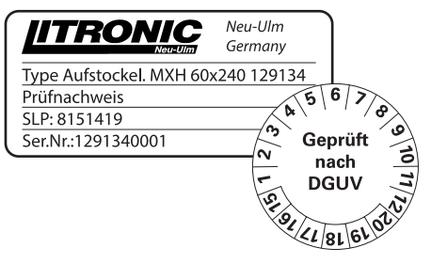
Mechanical components, e.g. spindles or gear mechanisms, must be cleaned of dirt or concrete residue before and after use, and then greased with a suitable lubricant.

Provide suitable support for the components during cleaning so that no unintentional change in their position is possible.

Do not clean components suspended on crane slings.

Periodic inspections

All electrical components of the MXH Heated Formwork have been inspected and furnished with an inspection plate according to the DGUV (German Statutory Accident Insurance).
The inspection plate indicates the month and date of the last inspection.



An insulation test, protective conductor test, and a working current measurement of the whole MXH Heated Formwork is to be carried out by a qualified electrician annually.

In addition, all relevant national provisions must be complied with.

Cross-system

General
The contractor must ensure that the Instructions for Assembly and Use supplied by PERI are available at all times and understood by the site personnel.

These Instructions for Assembly and Use can be used as the basis for creating a risk assessment. The risk assessment is compiled by the contractor. These Instructions for Assembly and Use do not replace the risk assessment!

Always take into consideration and comply with the safety instructions and permissible loads.

For the application and inspection of PERI products, observe the current safety regulations and guidelines applicable in the respective countries where the products are being used.

Materials and working areas are to be inspected on a regular basis, especially before each use and assembly, for:
- signs of damage,
- stability and
- function.

Damaged components must be exchanged immediately on site and may no longer be used.

Safety components are to be removed only when they are no longer required.

Components provided by the contractor must conform with the characteristics required in these Instructions for Assembly and Use as well as with all valid construction guidelines and standards. In particular, the following applies if nothing else is specified:
- Timber components: Strength Class C24 for Solid Wood according to EN 338.
- Scaffold tubes: galvanised steel tubes with minimum dimensions of Ø 48.3 x 3.2 mm according to EN 12811-1:2003 4.2.1.2.
- Scaffold tube couplings according to EN 74.

Deviations from the standard configuration are only permitted after a further risk assessment has been carried out by the contractor.On the basis of this risk assessment, appropriate measures for working and operational safety as well as stability are to be determined. Corresponding proof of stability can be provided by PERI on request if the risk assessment and resulting measures to be implemented are made available.

Before and after exceptional occurrences that may have an adverse effect regarding the safety of the formwork system, the contractor must immediately
- create another risk assessment, with appropriate measures for ensuring the stability of the formwork system being carried out based on the results,
- and arrange for an extraordinary inspection by a competent person. The aim of this inspection is to identify and rectify any damage in good time in order to guarantee the safe use of the formwork system.

Exceptional occurrences can include:
- accidents,
- longer periods of non-use,
- natural events, e.g. heavy rainfall, icing, heavy snowfall, storms or earthquakes.

Assembly, modification and dismantling work
Assembly, modification or dismantling of formwork systems may only be carried out by qualified persons and under the supervision of a competent person. The qualified persons must have received appropriate training for the work to be carried out with regard to specific risks and dangers.

On the basis of the risk assessment and the Instructions for Assembly and Use, the contractor must create installation instructions in order to ensure safe assembly, modification and dismantling of the formwork system.

The contractor must ensure that the personal protective equipment required for the assembly, modification or dismantling of the system, e.g.
- safety helmet,
- safety shoes,
- safety gloves,
- safety glasses,

is available and used as intended.

If personal protective equipment against falling from a height (PPE) is required or specified in local regulations, the contractor must determine appropriate attachment points on the basis of the risk assessment.
The PPE against falling to be used is determined by the contractor.

The contractor must
- provide safe working areas for site personnel which are to be reached through the provision of safe access ways. Areas of risk must be cordoned off and clearly marked.
- ensure the stability during all stages of construction, in particular during assembly, modification and dismantling of the formwork.
- ensure and prove that all loads can be safely transferred.

Utilization
Every contractor who uses or allows formwork systems or sections of the formwork to be used, has the responsibility for ensuring that the equipment is in good condition.

If the formwork system is used successively or at the same time by several contractors, the health and safety coordinator must point out any possible mutual hazards and all work must be then coordinated.

System-specific

Only operate heated panels in connection with assembled panel formwork.

Do not remove heating mats, do not use for heating rooms, vehicles or other unintended purposes.

Do not use the MXH Heated Formwork to defrost, heat or dry materials, clothing, textiles, food or other items for which it is not intended.

Heating wire and frame parts can become very hot. Do not touch during operations, allow to cool down before dismantling! Wear protective gloves.

Do not make any changes to the electrical equipment.
Only open the switch cabinet using the switch cabinet door. Do not remove the inside electric shock protection cover.

Do not mechanically load the heating mats.
Disconnet the power supply to the heater before assembly, dismantling and cleaning.

Do not clean the heating elements, cables and switch cabinet with a high-pressure cleaner.
Clean the heating mats with a damp cloth only, and protect against standing water.
Start operations only if the heating mats are completely dry.

Do not operate damaged parts. Repairs to the electrical system are to be carried out only by an qualified electrician authorised in accordance with respective national laws and regulations.

Do not store any flammable substances or objects in the vicinity during working operations.
Do not connect or operate in potentially explosive atmospheres.

Never bring insulating foam, heating mats and heating wires into contact with flammable substances.

The heated panels can be used as assembly aids when assembling mounting parts. However, ensure that they are not subjected to any loads.

Storage and transportation

Store and transport components ensuring that no unintentional change in their position is possible. Detach lifting accessories and slings from the lowered components only if they are in a stable position and no unintentional change is possible.

Do not drop the components.

Use PERI lifting accessories and lifting gear as well as only those load-bearing points provided on the component.

During the moving procedure
- ensure that components are picked up and set down so that unintentional falling over, falling apart, sliding, falling down or rolling is avoided.
- no persons are allowed to remain under the suspended load.

The access areas on the jobsite must be free of obstacles and tripping hazards as well as being slip-resistant.

For transportation, the surface used must have sufficient load-bearing capacity.

Use original PERI storage and transport systems, e.g. pallet cages, pallets or stacking devices.

A1 Storage and transportation

- **For reasons of safety, panels should never be treated with a concrete release agent before transportation.**
- **Transportation units must be correctly stacked and secured!**
- **Only panels of the same size are to be transported in one stack!**

Individual transport units

Individual transport units are not suitable for transport by crane.

Place Heated Panels on a pallet (9) and secure with a sufficient number of steel bands (7).
Also secure pallets with steel bands.
Stack floor bracket alternately right / left.

Insert anti-slip mats (8) between the steel frames.
Use edge protection.

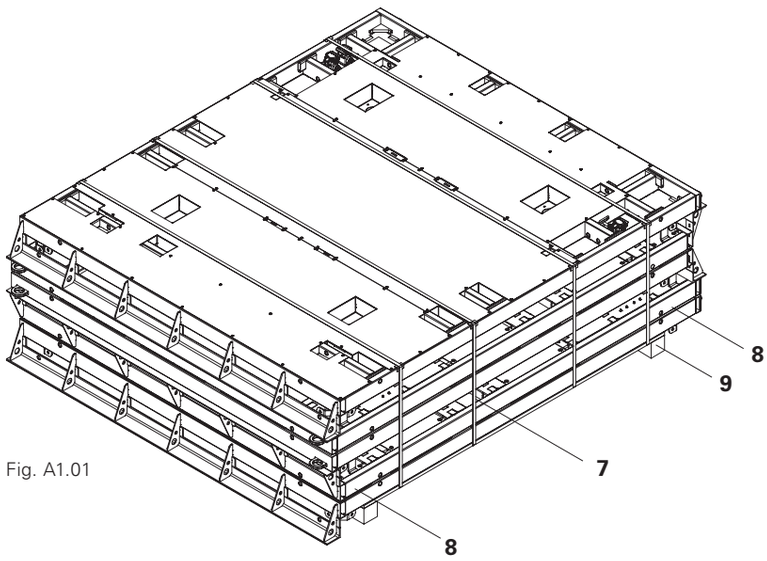


Fig. A1.01

Heated Panels:

MXH 270 x 240 cm (Fig. A1.01)	5x
MXH 270 x 120 cm	5x

Stack Heated Panels 270 x 120 cm on two Euro pallets.

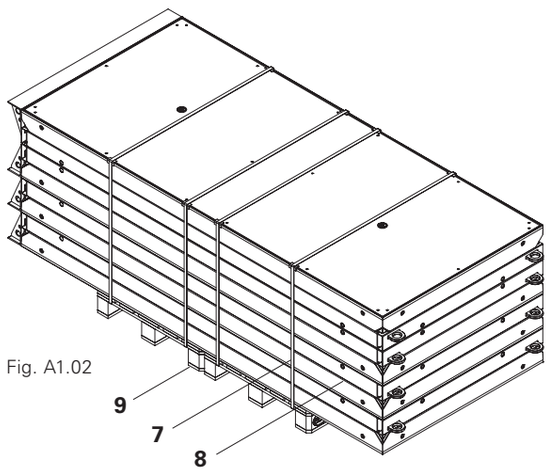


Fig. A1.02

Heated Panel with assembled Panel Formwork MX:

MXH 270 x 240 cm	4x
MXH 270 x 120 cm (Fig. A1. 02)	4x

Stack Panel Formwork MX downwards, stack top panel with Panel Formwork MX upwards.

Place Heated Panels on a Euro pallet (9) and secure with a sufficient number of steel bands (7).
Also secure pallets with steel bands.

Insert anti-slip mats (8) between the steel frames.
Use edge protection.

Extension Heated Panels:

MXH 120 x 240 cm	7x
MXH 120 x 120 cm	7x
MXH 60 x 240 cm (Fig. A1.03)	14x
MXH 60 x 120 cm	14x

2 stacks of MXH 60 are positioned next to each other, both sides have the same height! (Fig. A1.03)

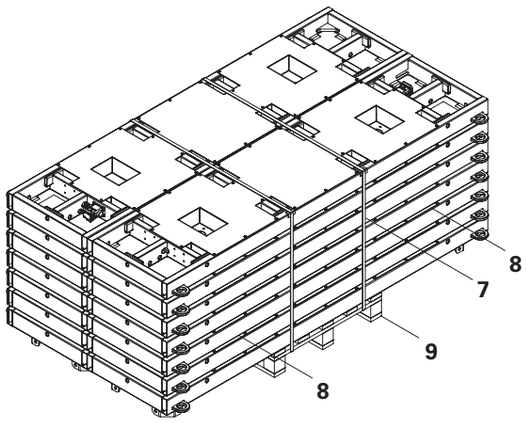


Fig. A1.03

Extension Heated Panels with assembled Panel Formwork MX:

MXH 120 x 240 cm	4x
MXH 120 x 120 cm (Fig. A1.04)	4x
MXH 60 x 240 cm	8x
MXH 60 x 120 cm	8x

2 stacks of MXH 60 are positioned next to each other, both sides have the same height!

Stack Panel Formwork MX downwards, stack top panel with Panel Formwork MX upwards.

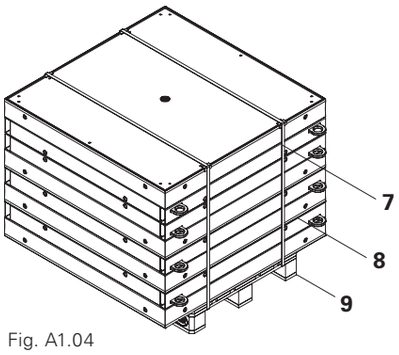


Fig. A1.04

A2 Panels

Panel sizes

Standard Heated Panel MXH

10 270 x 240 cm
11 270 x 120 cm

Extension Heated Panel MXH

12 120 x 240 cm
13 120 x 120 cm
14 60 x 240 cm
15 60 x 120 cm

Height Extension Panels MX without heating

16 30 x 240 cm
17 30 x 120 cm

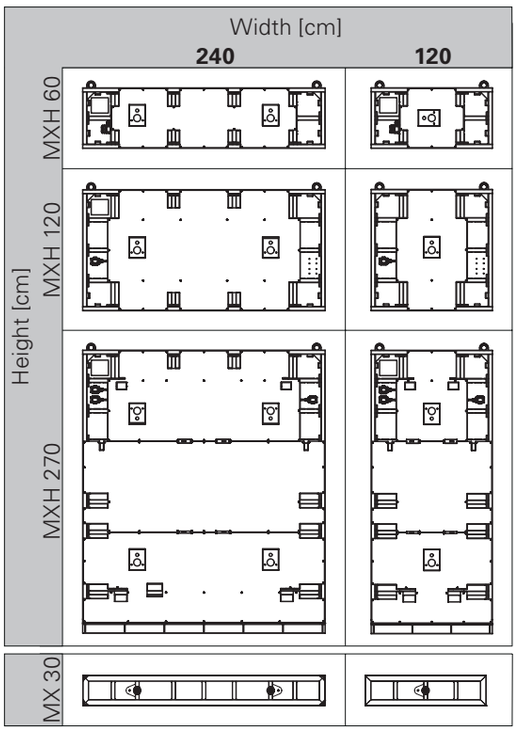


Fig. A2.01

Defining the building steps

Panel
Individual, non-assembled panels:
Heated Panel MXH (Fig. A2.02)
Panel MX (Fig. A2.03)

Heated Formwork Panel
Assembled Heated Formwork Panel consisting of Heated Panel MXH and Panel MX. (Fig. A2.04)

Heated Formwork Unit
Assembled Heated Formwork Unit consisting of two or more Heated Formwork Panels. (Fig. A2.05)

MXH Heated Formwork
Erected Heated Formwork Units. (Fig. A2.06)

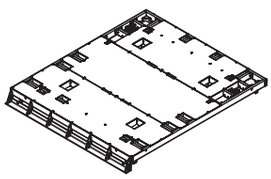


Fig. A2.02

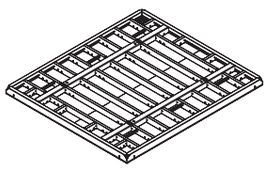


Fig. A2.03

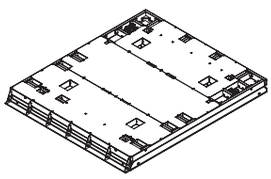


Fig. A2.04

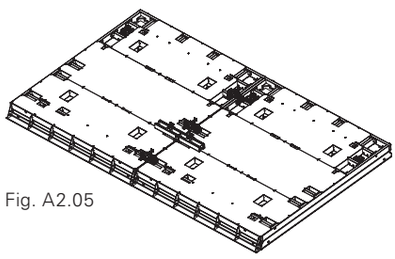


Fig. A2.05

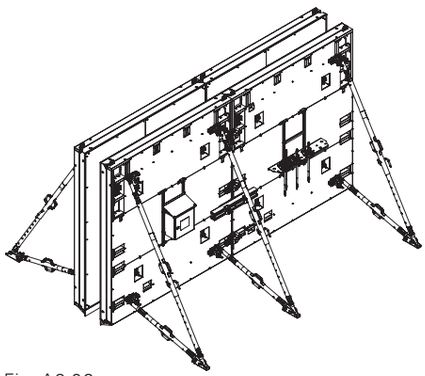


Fig. A2.06

Panel overview

Rear side of Heated Panel MXH

10.1 Frame
10.2 Load-bearing point for crane eye
10.3 Panel strut
10.4 Cover plate
10.5 Installation angle*
10.6 Anchor point
10.7 Electric connection socket
10.9 Transport opening, e.g. for Lifting Gear Combi

Connection points for

20 Alignment Coupler BFD
21 Compensation Waler MAR*
22 Connector RS MXH*
23 Switch cabinet*
24 Tie Holder*
25 Scaffold Bracket*
26 Ladder Connector*

Heating side of the Heated Panel MXH

10.8 Screw-on Locking Angle
82 Heating mat
84 Insulation (covered)

* Not available on all panels.

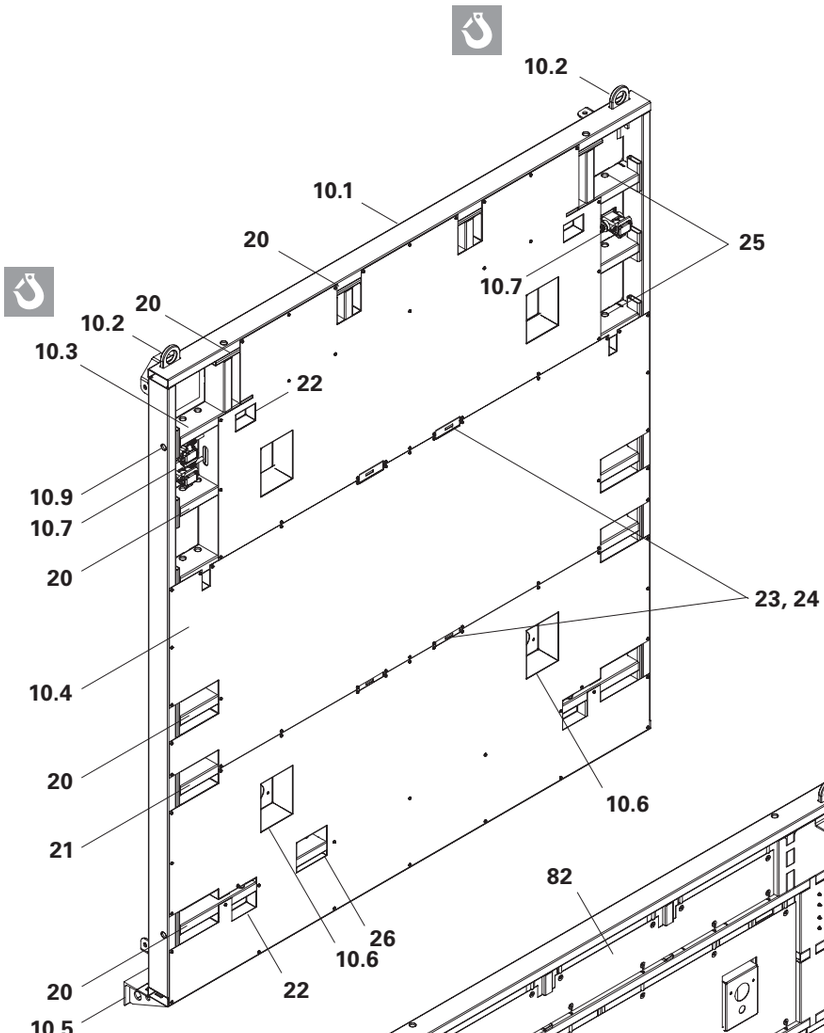


Fig. A2.07

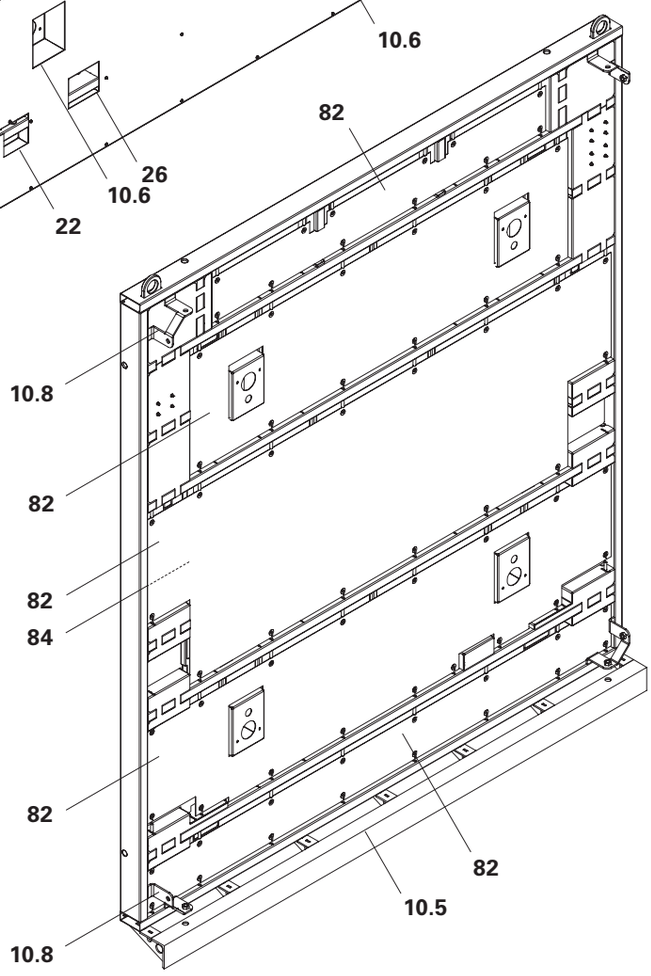


Fig. A2.08

A3 Panel connections

Alignment Coupler BFD

(Fig. A3.01)

Areas of use:

– Standard Heated Panel joints
– Extensions with Heated Panels.
– Extensions with Panel MX 30, in connection with Adaptor Connector MXH.

Number of alignment couplers per standard panel joint

3x Alignment Coupler BFD (30) for H = 2.70 m. (Fig. A3.02)

Assembly

1. Place wedge in upper end position.
2. Open sliding part. (Fig. A3.03)
3. Place Alignment Coupler BFD on the panel strut. (Fig. A3.04)
4. Close sliding part.
5. Hammer in wedge tightly. (Fig. A3.05)

If the wedge head rests on the sliding part, there is no clamping effect! (Fig. A3.06)
In this case: release wedge, re-position the sliding part and secure once again with the hammer.

When securing the wedge, the following effects occur due to the angle of the frame profile:

– 1. Panels are flush.
– 2. Panels are aligned.
– 3. Panels are tightly connected.

Arrangement of the Alignment Couplers

see B1 Assembly, B6 Additional Heated Panel Units.

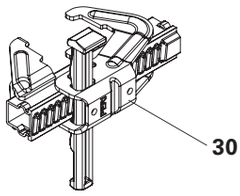


Fig. A3.01

Fig. A3.02

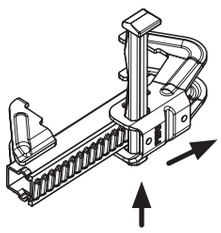


Fig. A3.03

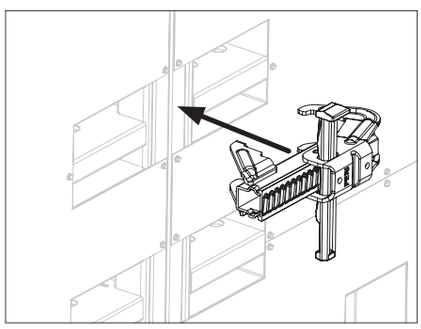


Fig. A3.04

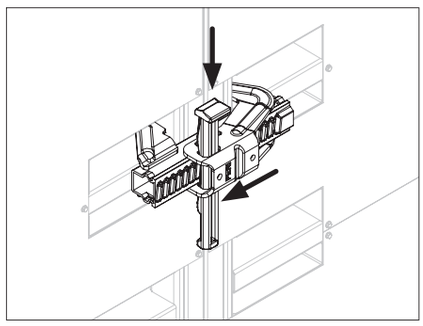


Fig. A3.05

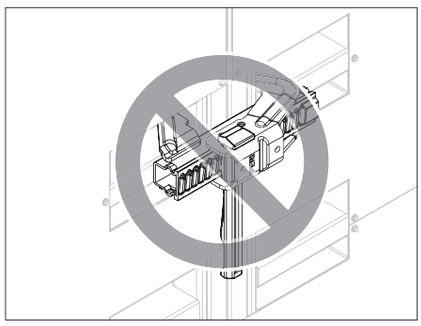


Fig. A3.06

Compensation Waler MAR 85
(Fig. A3.07)

The Compensation Waler MAR (31) has a triple function as a panel connection: to brace, align, and transfer forces.

Areas of use:
– Standard Heated Panel joint (Fig. A3.08)

Assembly
1. Release Nut (31.2), pull out Hook Tie towards the rear.
2. Insert hooks (31.1) in the connecting holes (21) of the panel. (Fig. A3.09)
3. Tighten Nut (31.2). (Fig. A3.10)

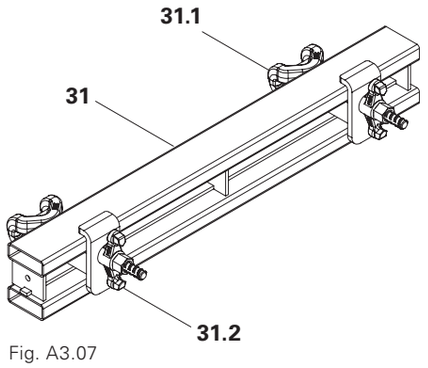


Fig. A3.07

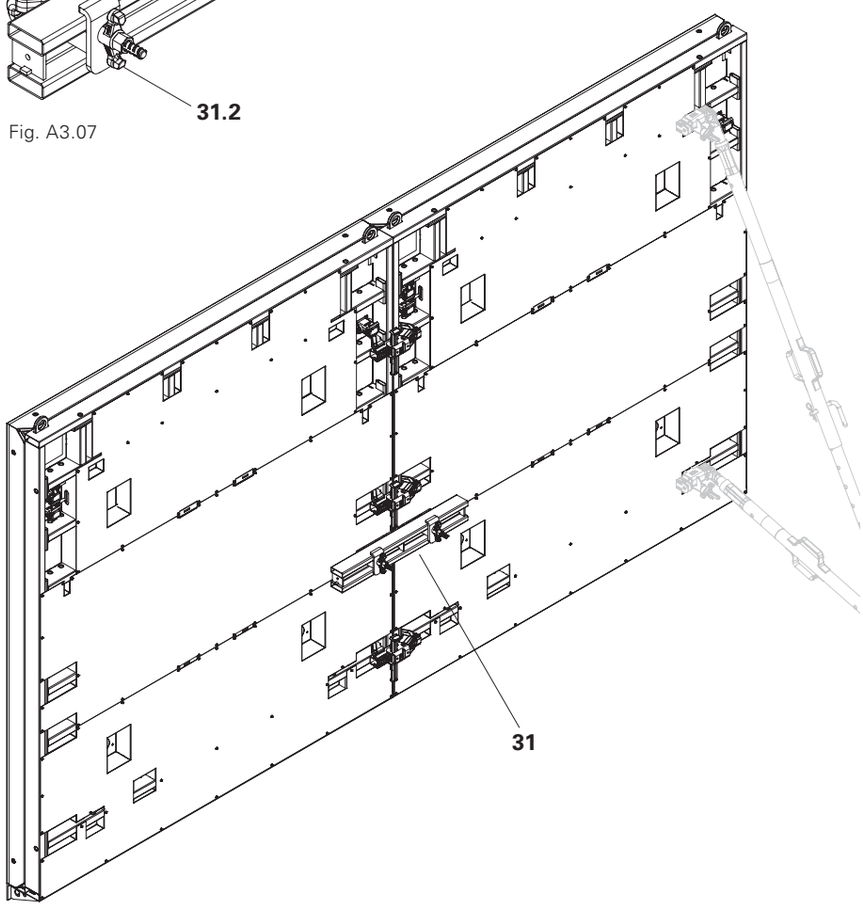


Fig. A3.08

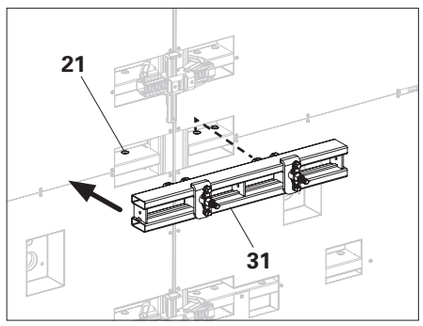


Fig. A3.09

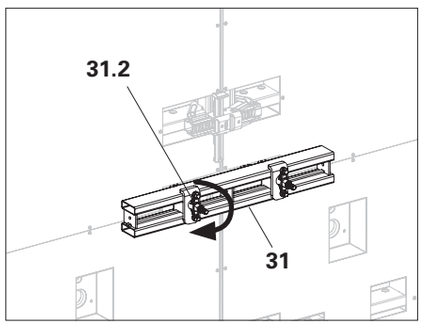


Fig. A3.10

Adaptor Connector MXH
(Fig. A3.11)

In conjunction with the Alignment Coupler BFD, the Adapter Connector MXH is used for extending Panel MX 30.

Areas of use:
– Extensions with Panel MX 30.

Assembly
1. Insert claws of the Adapter Connection MXH (38) in the panel strut (16.3) of the Panel MX 30 (16). (Fig. A3.12)
2. Place Alignment Coupler BFD (30) on the panel strut (10.3) and Adaptor Connector MXH. (Fig. A3.13)
3. Close sliding part of the Alignment Coupler BFD.
4. Hammer in wedge tightly. (Fig. A3.14)

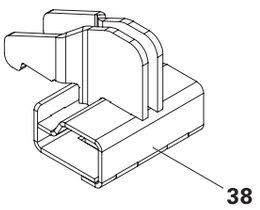


Fig. A3.11

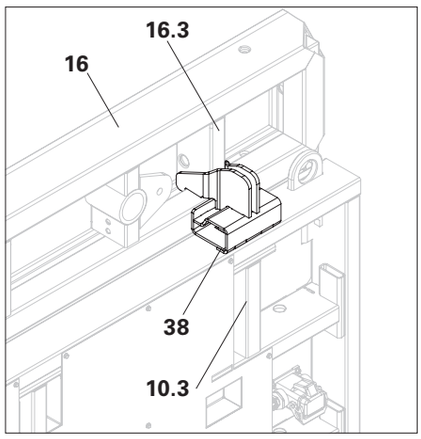


Fig. A3.12

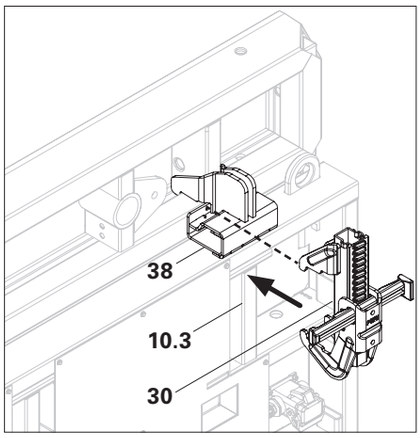


Fig. A3.13

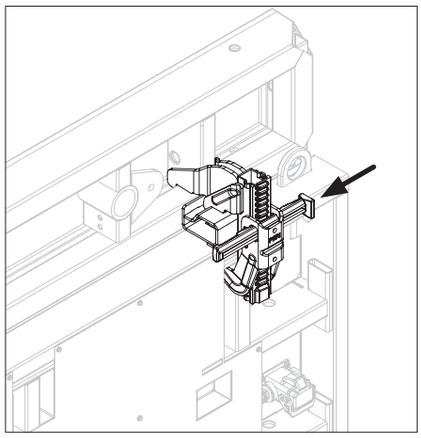


Fig. A3.14

Tie systems

The MX 15 and MX 18 Tie Systems are used.

The tie system consists of:
MX 15 Tie (40) and Counterplate (41). (Fig. A4.01 + A4.02)

Permissible tension force of the tie rods:
MX 18 130 kN
MX 15 90 kN

Assembly
The Heated Panels have access openings to the anchor points of the MAXIMO MX 15 and MX 18 Panel Formwork. (Fig. A4.03 + A4.04)

Assembly is carried out in the same way as for the MAXIMO MX 15 or MX 18 Panel Formwork, see Instructions for Assembly and Use for the MAXIMO MX 15 or MX 18.

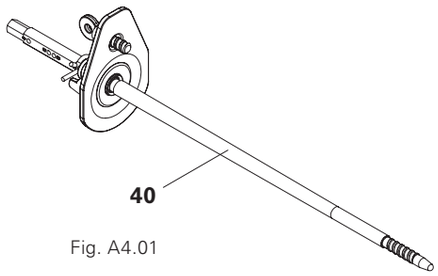


Fig. A4.01

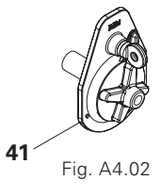


Fig. A4.02

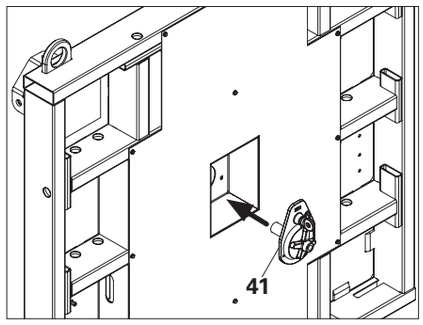


Fig. A4.03

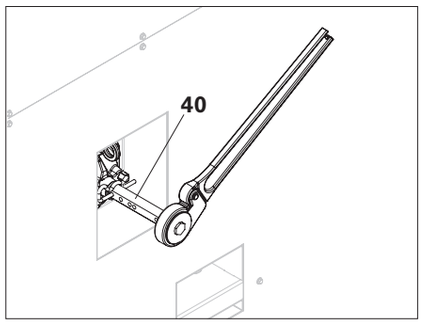


Fig. A4.04

Scaffold Builder Ratchet Extension

If MX Ties are set to their maximum length, a Scaffold Builder Ratchet Extension (43) is required to tighten and loosen the MX Ties. (Fig. A4.05)

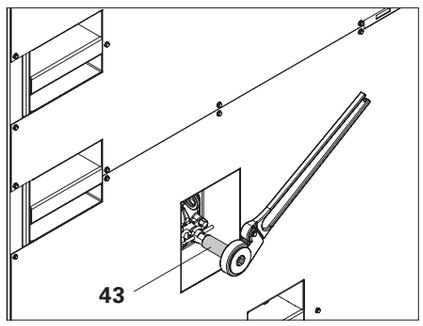


Fig. A4.05

Tie Holder

The Tie Holder (44) is used for reliably storing MX Ties when moving the Heated Panels. (Fig. A4.06 + A4.07)

Assembly: see B6 Additional Heated Panel Units, Tie Holder.

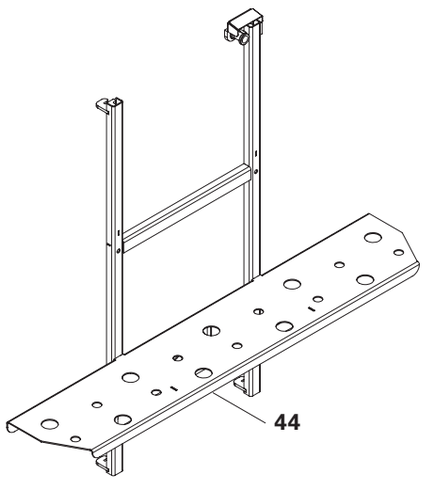


Fig. A4.06

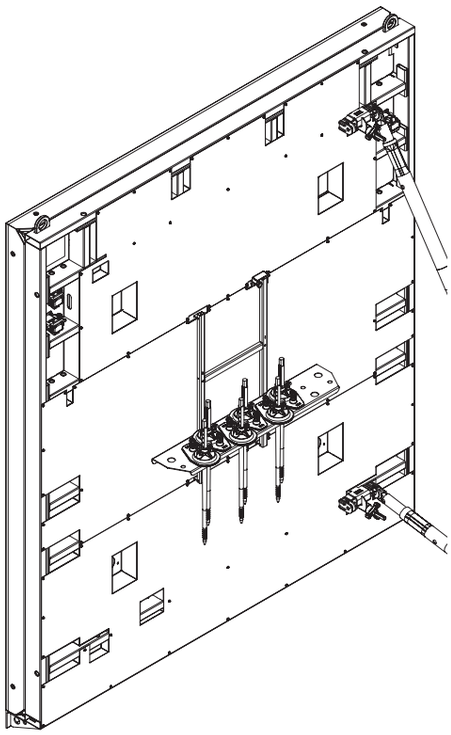


Fig. A4.07

Heated Formwork Panel

- **Danger due to suspended load!**
- **Take into account the permissible load-bearing capacity of the crane lifting gear and the crane capacity!**
- **Follow Instructions for Use for the Lifting Gear Combi MX at all times!**
- **Risk of crushing! During assembly, ensure that the panel cannot fall off or slide. Use stable supports!**
- **Risk of slipping! Heated Panels are slippery to handle in wet or snowy conditions. Do not walk on Heated Panels!**
- **Before assembly, inspect heating mats for any loose or broken heating wires. Do not use damaged Heated Panels.**

Heated Panels MXH are always assembled on the Panel MX in the same way regardless of the panel size.
Only mount Heated Panel MXH on Panel Formwork MAXIMO MX of the same size.

Required components:

10	Heated Panel MXH	1
18	Panel MX	1
37	Fixing Bolt M14 MXH	8

Assembly

1. Lay out timber (9) or planking as a base. The assembly area must be even.
2. Place Panel MX (18) with formlining facing downwards on the supports.
3. Attach the Heated Panel MXH (10) with the Lifting Gear Combi MX (3) to the transport openings (10.9) and then place this on the Panel MX using the crane. (Fig. B1.01)
4. At each of the 4 corners, insert 2x Fixing Bolts M14 MXH (37) through the openings of the Panel MX into the Screw-On Locking Angle (10.8) and tighten. Wrench size: Allen Key SW 10. (Fig. B1.02)

Pay attention to the alignment! Openings for anchors and anchor bolt must match.

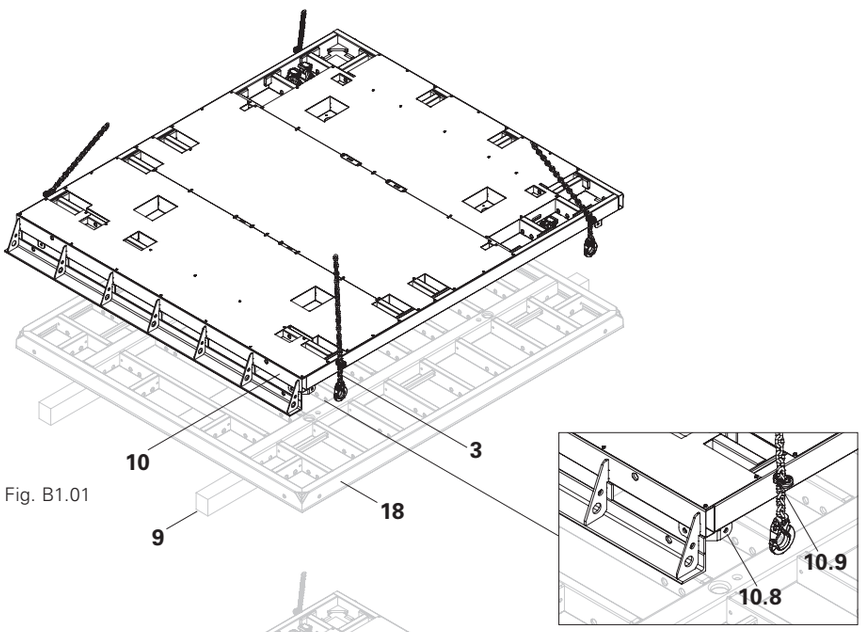


Fig. B1.01

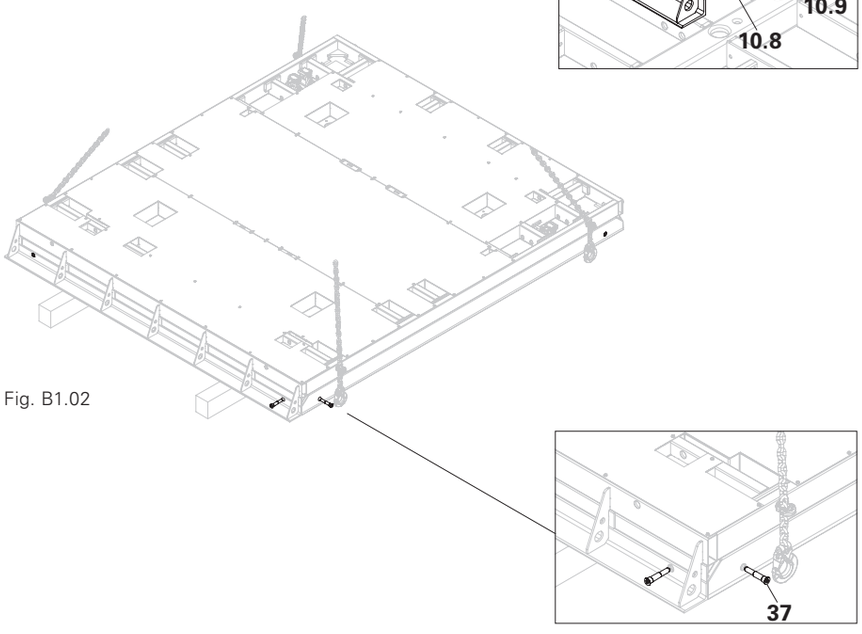


Fig. B1.02

Height extensions

Heated Formwork Panels are pre-assembled horizontally to form Heated Panel Units.
Height max. = 4.00 m.

Maximum transport units: see D1 Moving Heated Panel Units.

Permissible combinations
for panel widths 1.20 m and 2.40 m:
MXH 270,
MXH 270 + MX 30,
MXH 270 + MXH 60,
MXH 270 + MXH 60 + MX 30,
MXH 270 + MXH 120.
(Fig. B1.03)

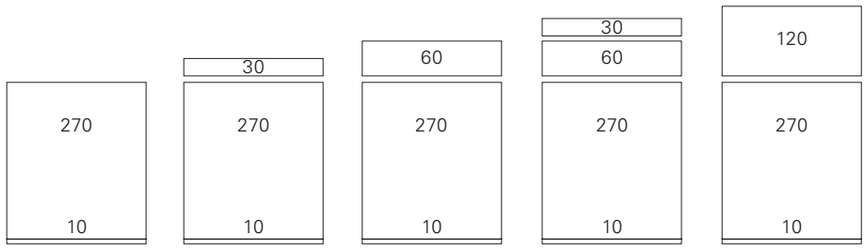


Fig. B1.03

Extensions with Heated Formwork Panels

Required components:
For panel widths 2.40 m

10	Heated Formwork Panel 270 x 240	1x
12	Extension Heated Formwork Panel 120 x 240 or	
14	60 x 240	1x
30	Alignment Coupler BFD	4x

For panel widths 1.20 m.

10	Heated Formwork Panel 270 x 120	1x
13	Extension Heated Formwork Panel 120 x 120 or	
15	60 x 120	1x
30	Alignment Coupler BFD	2x

Assembly
1. Lay out timber (9) or planking as a base. The assembly area must be even.
2. Place Heated Formwork Panel (10) with formlining facing downwards on the supports. (Fig. B1.04)
3. Position the Extension Heated Formwork Panel (12) at the top. (Fig. B1.05)
4. Connect the Heated Formwork Panel to the designated frame struts using the Alignment Coupler BFD (30). (Fig. B1.06 + B1.06a)
   See A3 Panel connections.
   → Heated Formwork Unit is now mounted.

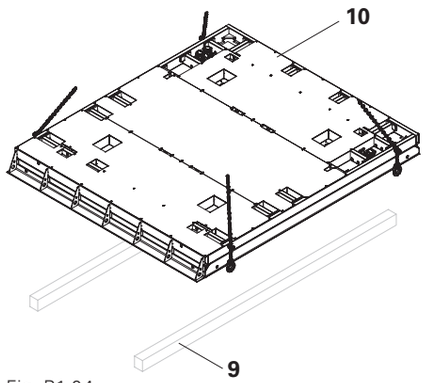


Fig. B1.04

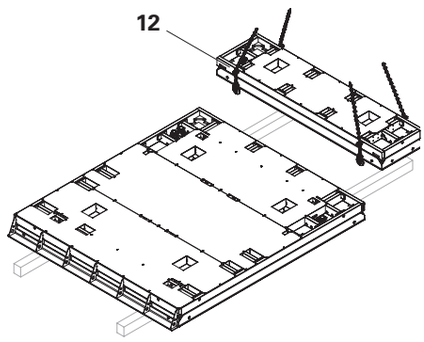
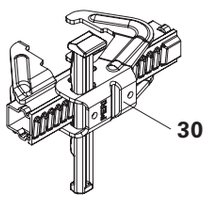


Fig. B1.05



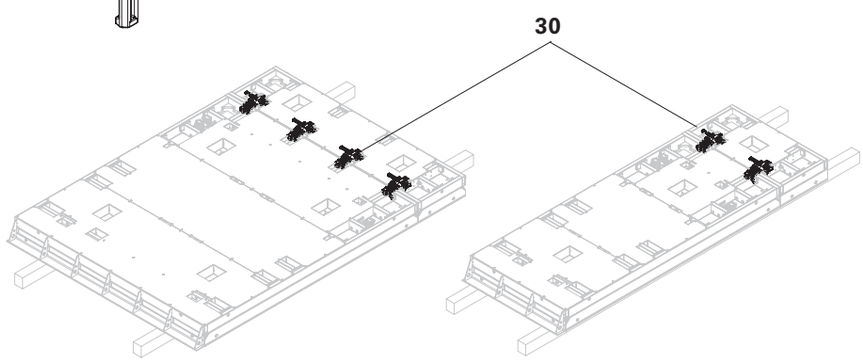


Fig. B1.06

Fig. B1.06a

Extensions with Panel MX 30

- **Danger due to suspended load!**
- **Take into account the permissible load-bearing capacity of the crane lifting gear and the crane capacity!**
- **Follow Instructions for Use for the Lifting Gear Combi MX at all times!**

Use the Adapter Connector MXH (38) for connecting Panel MX 30 to a Heated Formwork Panel. (Fig. B1.07)

Required components:
For panel widths 2.40 m

10	Heated Formwork Panel 270 x 240	1x
12	Extension Heated Formwork Panel *	1x
16	Panel MX 30 x 240	1x
38	Adaptor Connector MXH	4x
30	Alignment Coupler BFD	4x

For panel widths 1.20 m.

10	Heated Formwork Panel 270 x 120	1x
13	Extension Heated Formwork Panel *	1x
17	Panel MX 30 x 120	1x
38	Adaptor Connector MXH	2x
30	Alignment Coupler BFD	2x

*Depending on the selected combination.

Assembly
1. Position Panel MX 30 (17) on the Heated Formwork Panel (10) or Extension Heated Formwork Panel at the top. (Fig. B1.08)
2. Attach Adapter Connector MXH (38) to the frame strut in Panel MX 30 with the claws. Adaptor Connector MXH is positioned on the top edge of the Heated Formwork Panel. (Fig. B1.09)
3. Connect the Heated Formwork Panel MXH and Panel MX 30 to the frame strut and Adapter Connector MXH using the Alignment Coupler BFD (30). (Fig. B1.10)
   See A3 Panel connections.

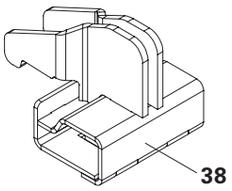


Fig. B1.07

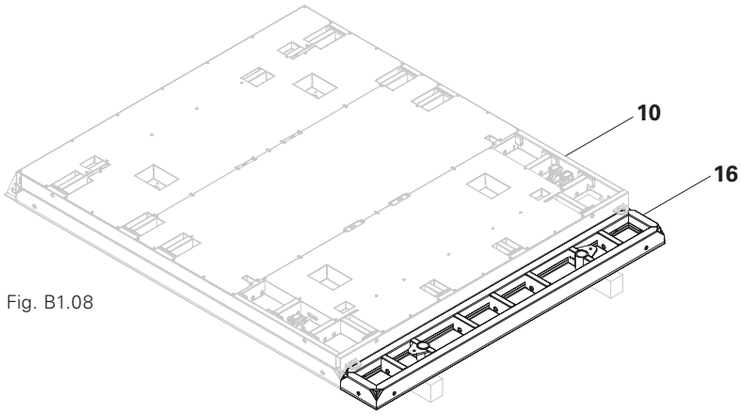


Fig. B1.08

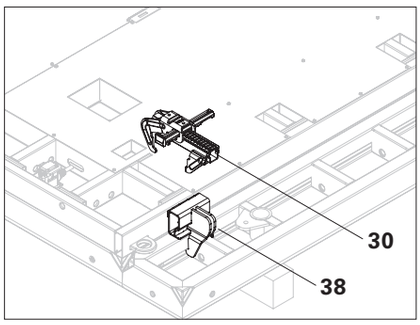


Fig. B1.09

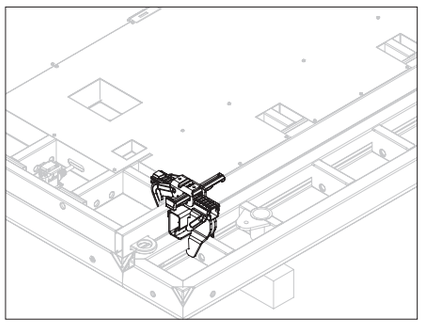


Fig. B1.10

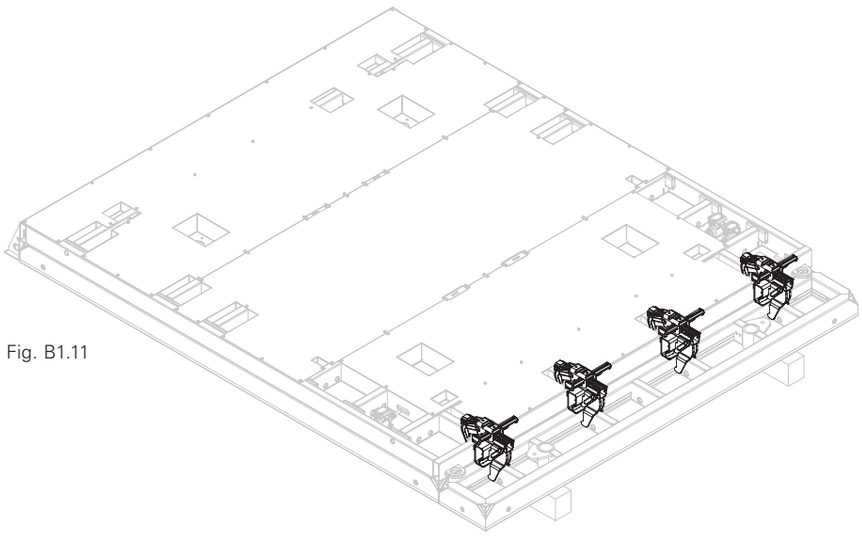


Fig. B1.11

Connecting Heated Formwork Panels

Heated Formwork Panels can be pre-assembled horizontally to form larger Heated Panel Units.

Maximum transport units: see D1 Moving Heated Panel Units.

Required number of Alignment Coupler BFD and Compensation Waler MAR 85:

Vertical joints

Panel height 2.70 m	3 x BFD 1 x MAR 85
Panel height 1.20 m	2 x BFD
Panel height 0.60 m	1 x BFD
Panel height 0.30 m	–

Horizontal joints

Panel width 2.40 m	4 x BFD
Panel width 1.20 m	2 x BFD

Assembly

1. Lay out timber or planking as a base. The assembly area must be even.
2. Place Heated Formwork Panels with formlining facing downwards on the supports.
3. Connect the Heated Formwork Panels to the designated frame struts using the Alignment Couplers BFD (30) and Compensation Walers MAR 85 (31). (Fig. B1.12 + B1.13) See A3 Panel connections.
4. If required, mount additional Heated Formwork Panels.
   → Heated Formwork Panel Units are now mounted.

Install Compensation Waler MAR 85 offset if the adjacent Heated Formwork Panel is 1.20 m wide and a switch cabinet is to be installed there. (Fig. B1.13)

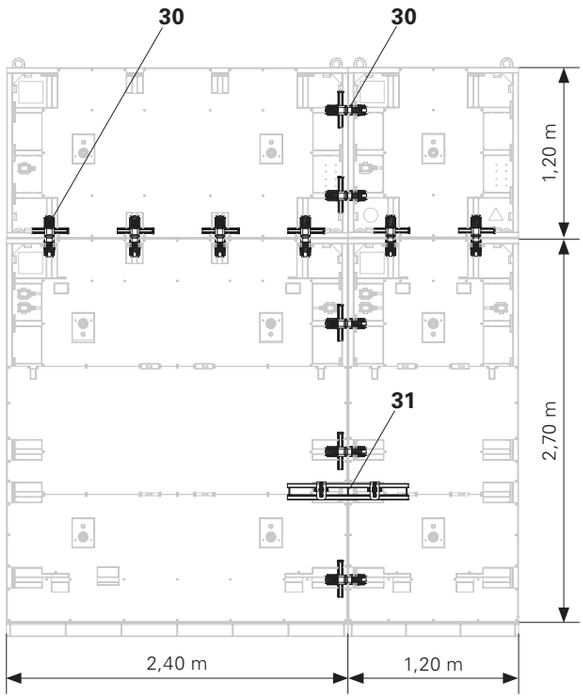


Fig. B1.12

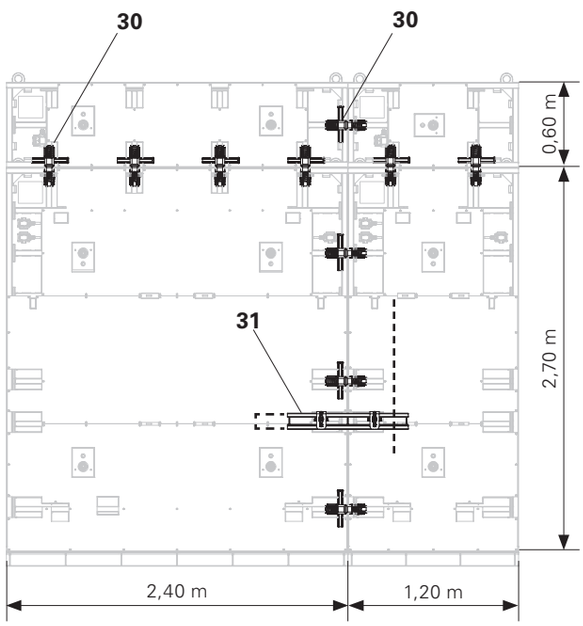


Fig. B1.13

Connector RS MXH

– **Risk of slipping! Heated Panels are slippery to handle in wet or snowy conditions. Do not walk on Heated Panels!**

Push-pull props and Kickers are attached to the panel using the Connector RS MXH. If required, wind bracing can be attached to the Connector RS MXH. (Fig. B2.01a)

Assembly

1. Release Triple Wingnut (32.2) and pull back Hook Tie (32.1).
2. Position the Connector RS MXH (32) on the panel strut (22) so that the Hook Tie (32.1) is linked into a connecting hole. (Fig. B2.02)
3. Tighten Connector RS MXH with the Triple Wingnut (32.2). (Fig. B2.03)
   → Connector RS MXH is now mounted. (Fig. B2.04)

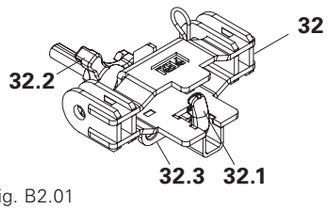
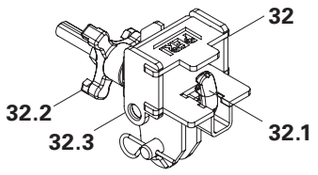


Fig. B2.01



An alternative Connector RS MXH

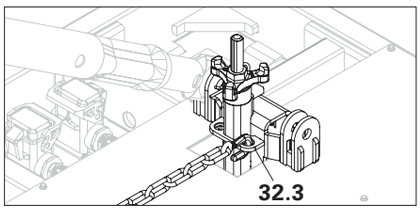


Fig. B2.01a

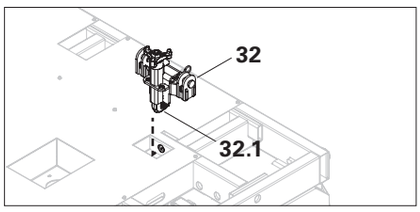


Fig. B2.02

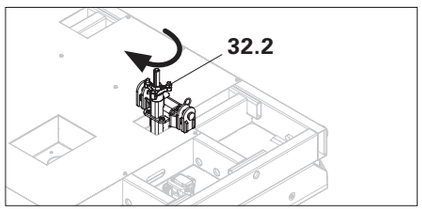


Fig. B2.03

Push-Pull Props and Kickers

Required components:

10	Heated Formwork Panel 270 x 240	1x
32	Connector RS MXH	4x
90	Push-Pull Prop	2x
91	Kicker	2x
92	Base Plate	2x

Push-Pull Props and Kickers are mounted in order to align the formwork as well as providing stability. The choice of the Push-Pull Prop and Kicker is determined by the height of the formwork. The maximum width of influence is 2.40 m. Observe design table for PERI Push-Pull Props and Kickers.

Assembly

1. Fix Push-Pull Prop (90) and Kicker (91) to the connecting eyelet (32.4) of the Connector RS MXH (32) by means of bolts and cotter pins.
2. Connect Push-Pull Prop and Kicker to the Base Plate (92). (Fig. B2.05)
   → Push-Pull Props are now mounted.

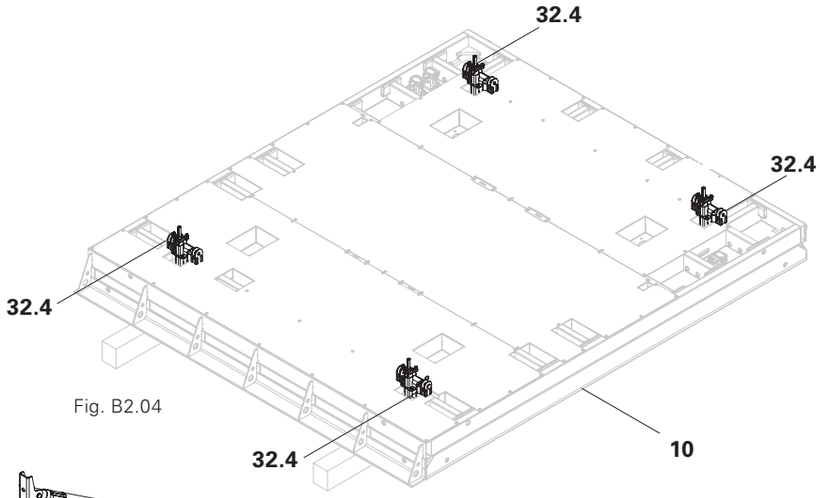


Fig. B2.04

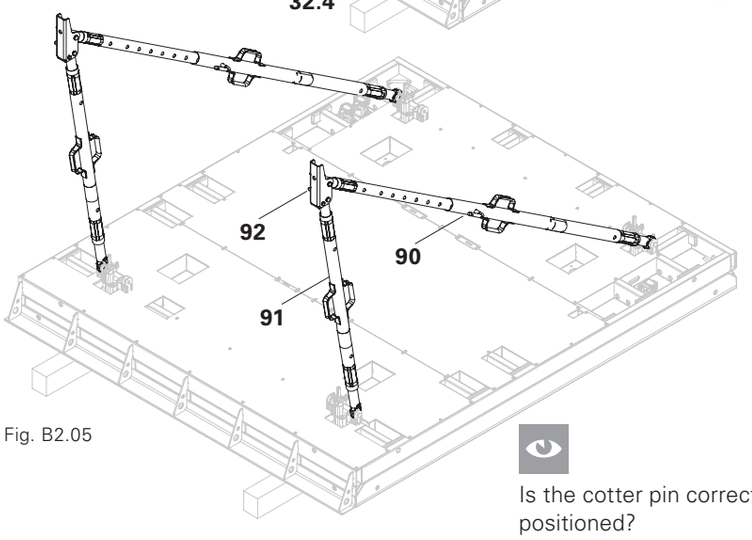


Fig. B2.05

Is the cotter pin correctly positioned?

- **Risk of crushing! During assembly, ensure that the panel cannot fall off or slide. Use stable supports!**
- **Risk of slipping! Heated Panels are slippery to handle in wet or snowy conditions. Do not walk on Heated Panels!**
- **Follow Instructions for Assembly and Use for the MAXIMO MXK Bracket System!**

Assembly of the MXK Bracket System takes place on horizontally-positioned panels. See Instructions for Assembly and Use for the MAXIMO MXK Bracket System.

Scaffold Bracket MXK

Assembly

1. Push the Scaffold Bracket MXK (50) with the top and bottom Connector RS MXH from above into the connection hole for scaffold brackets (25). (Fig. B3.01)
2. The Scaffold Bracket is correctly positioned if the hooks (50.3) of the securing pin are positioned as shown in Fig. B3.02.

Visual and functional check! The hook (50.3) of the securing pin must be held in position with spring force.
(Fig. B3.02)
If the spring force is missing, the Scaffold Bracket MXK must not be used!

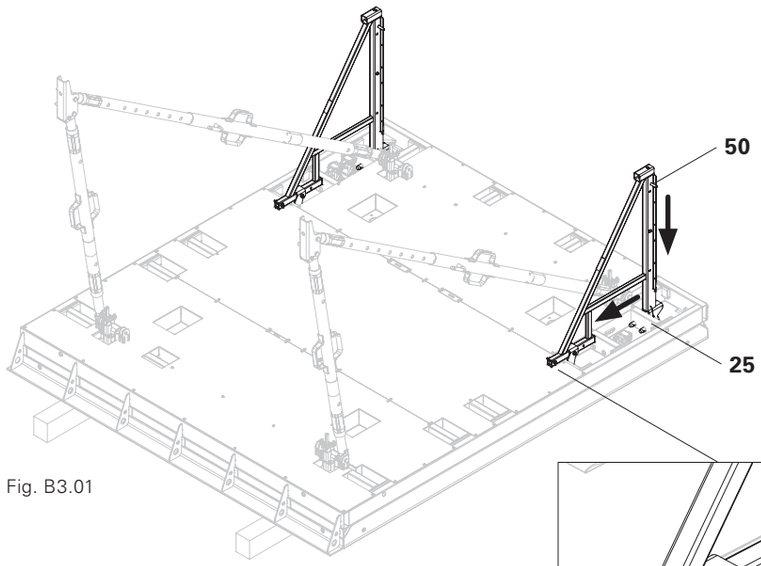


Fig. B3.01

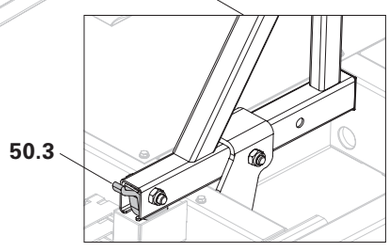


Fig. B3.02

Scaffold Deck MXK

Assembly

1. Position both guide bolts (51.1) of the Scaffold Deck MXK (51) behind the plates (50.6) of the Scaffold Brackets MXK (50). (Fig. B3.04 + B3.04a)
2. Press the Scaffold Deck MXK to the Scaffold Bracket MXK.
3. Lift the Scaffold Deck MXK over the retaining bolts (50.7), press to the Bracket and lower. (Fig. B3.05)
   → Scaffold Deck MXK is now mounted.
4. Scaffold Deck MXK is secured by assembling the Guardrail Post MXK.

Both hooks (51.2) of the Scaffold Deck MXK must be hooked in on both sides above the retaining bolts (50.7). (Fig. B3.05)

Risk of injury from falling components! If Guardrail Post MXK has not been mounted, the Heated Formwork Unit may not be placed in position.

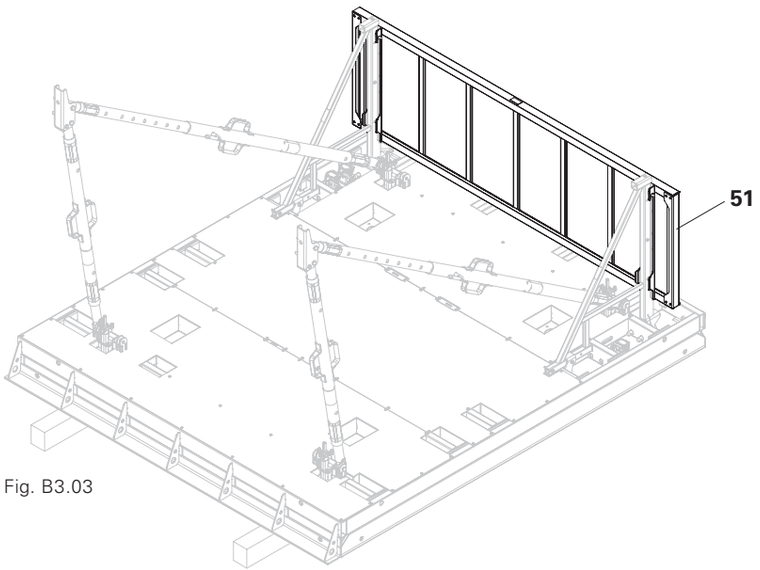


Fig. B3.03

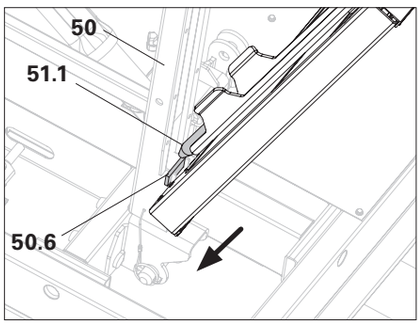


Fig. B3.04

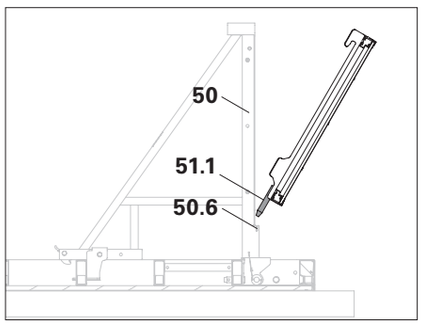


Fig. B3.04a

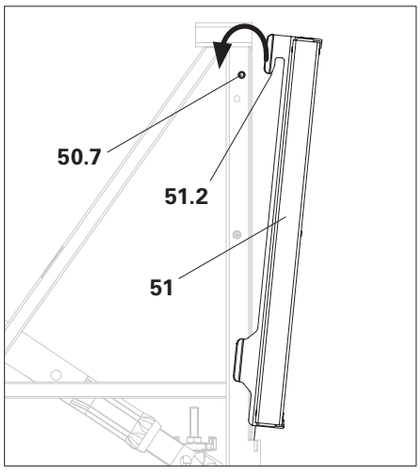


Fig. B3.05

Scaffold Deck MXK with Access Hatch

When asssembling the Scaffold Deck with Access Hatch (53) and Access Ladder, make sure that these are not mounted on the left-hand unit in order to ensure free access to the switch cabinet.
The electrical switch cabinet is always installed on the left of max. 3 Heated Panels.

The Scaffold Deck with Access Hatch is mounted in the same way as the Scaffold Deck MXK.

Access Ladder
is mounted on a vertically-positioned panel, see B5 Safety installations.

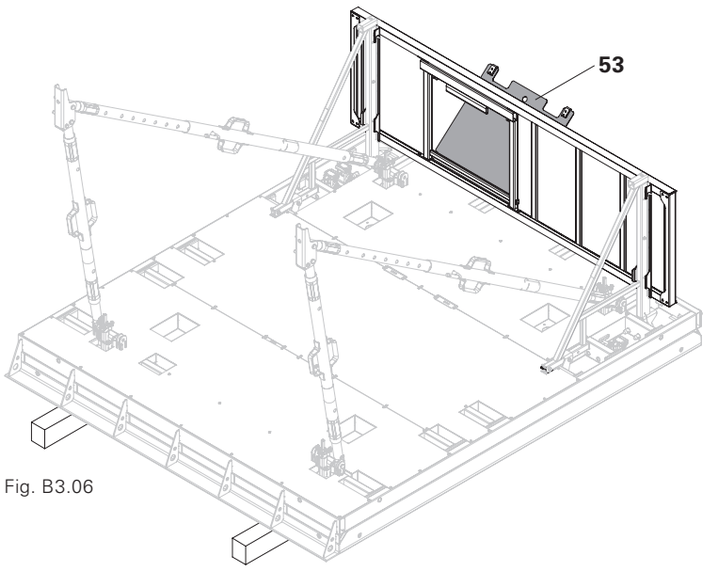


Fig. B3.06

Guardrail Post MXK

Assembly
Push the Guardrail Posts MXK (52) into the support (50.4) of the Scaffold Bracket MXK until the securing hook (52.1) locks into the hole (50.5) (Fig. B3.08)
→ Guardrail Post MXK is now secured.
→ Scaffold Deck MXK is now secured.

For assembly of other decks, see Instructions for Assembly and Use for the MAXIMO MXK Bracket System.

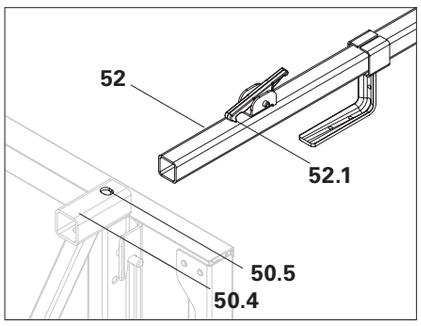


Fig. B3.07

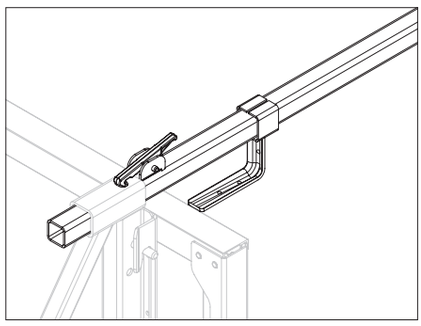


Fig. B3.08

The securing hook must be held in position with spring force. (Fig. B3.08)
If the spring force is missing, the Guardrail Post MXK must not be used!

Mount Side Mesh Barrier PMB, Stopend Guardrail MXK and Access Ladder after erection.

Risk of falling! When using the MXK Bracket System with incomplete guardrails, measures to prevent falling must be taken!

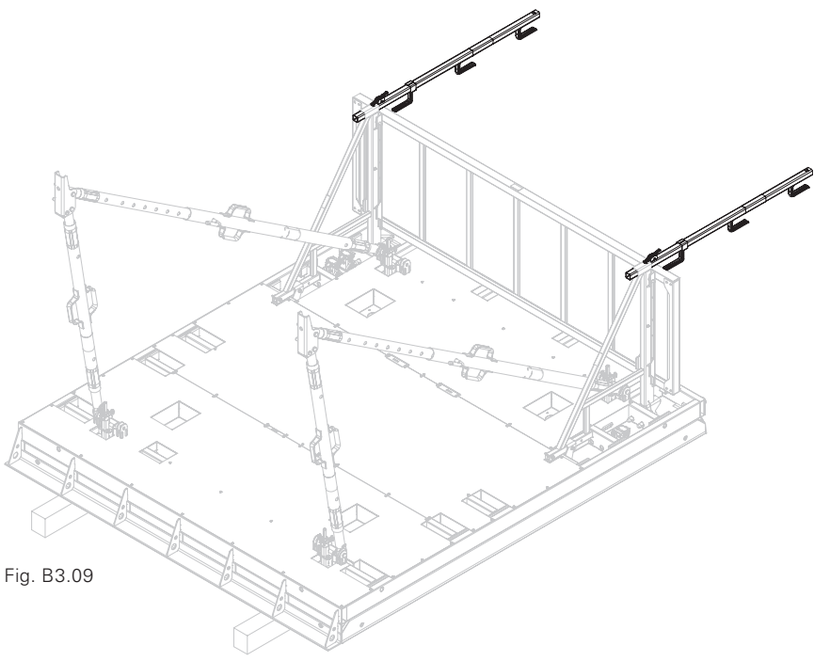


Fig. B3.09

Moving with the crane

- **Risk of falling! Fall protection measures. e.g. PPE against falls from a height, are to be implemented if persons work on the Scaffold Bracket System MXK without a fully-mounted guardrail.**
- **Danger due to suspended load!**
- **Take into account the permissible load-bearing capacity of the crane lifting gear and the crane capacity!**
- **Follow Instructions for Use for Lifting Gear Combi MX and Lifting Hook MAXIMO 1.5 t!**

- For working areas at great heights choose a safe working area, e.g. mobile scaffold.
- Maximum transport units see D1 Moving Heated Panel Units.

Heated Panel MXH
Move Heated Panel Unit using the load-bearing point of the Crane Eye (10.2). (Fig. B4.01)

Panel MX 30
Use Lifting Hook MAXIMO 1.5 t (4) for Heated Panel Units with Panel MX 30 as extension. (Fig. B4.01a)

Assembly
1. Attach Combi Lifting Gear to the load-bearing point of the Crane Eye (10.2) or Lifting Hook (4). (Fig. B4.01 + B4.01a)
2. Transport panel to place of operation by crane.
3. Mount Base Plate (92), e.g. with PERI Anchor Bolt 14/20 x 130 (93) (Fig. B4.03 + B4.03a)
4. Using PPE to prevent falling from a height, mount Side Mesh Barrier PMB and Stopend Guardrail MXK, see B5 Safety installations.
5. Release Combi Lifting Gear from the load-bearing point of the Crane Eye or Lifting Hook.

When using PERI Anchor Bolt 14/20 x 130, take into account the Technical Data Sheet!

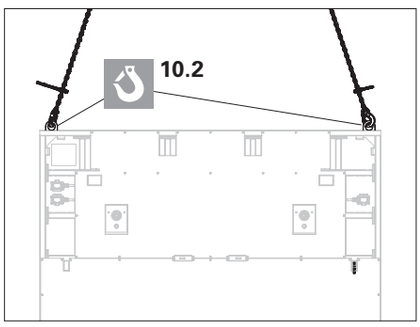


Fig. B4.01

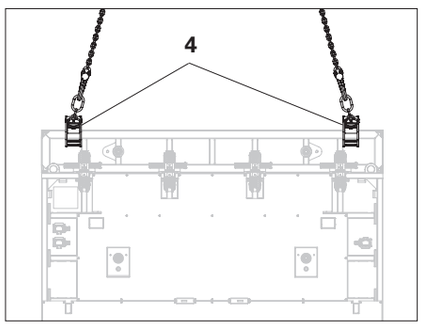


Fig. B4.01a

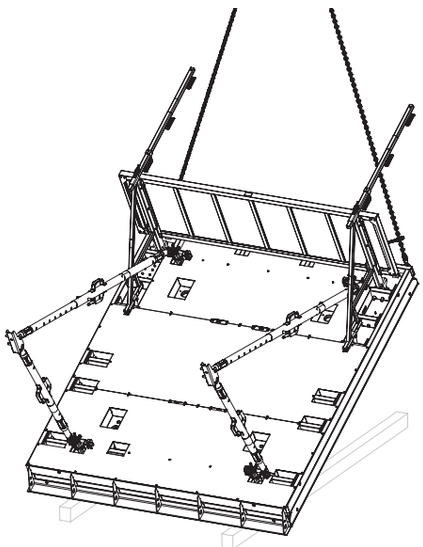


Fig. B4.02

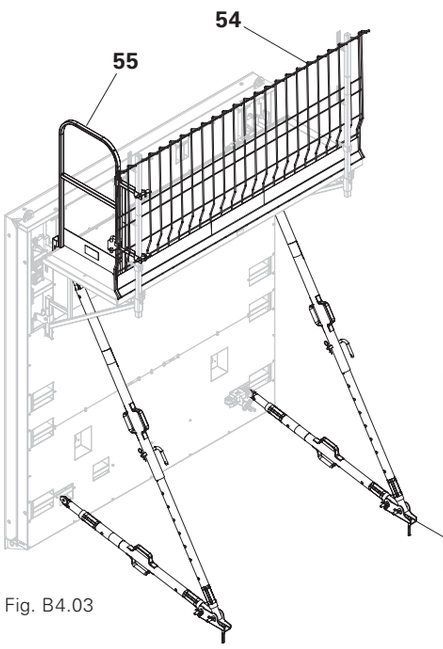


Fig. B4.03

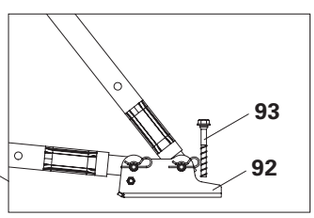


Fig. B4.03a

– **Risk of falling! Fall protection measures. e.g. PPE to prevent falling from a height, are to be implemented if work is carried out on the Scaffold Bracket System MXK without fully-mounted guardrails.**
– **Follow Instructions for Assembly and Use for the MAXIMO MXK Bracket System!**

Side Mesh Barrier PMB

Assembly

1. Hook Side Mesh Barriers PMB 120 (54) into the top L-bracket (52.2).
2. The Toeboard is held in position.
3. Lift the adjustable L-bracket (52.3). (Fig. B5.01)
4. Push Toeboard to the Guardrail Post Holder MXK. (Fig. B5.01)
5. Lower the adjustable L-bracket (52.3). (Fig. B5.02)

→ Side Mesh Barrier PMB is now secured against lifting.

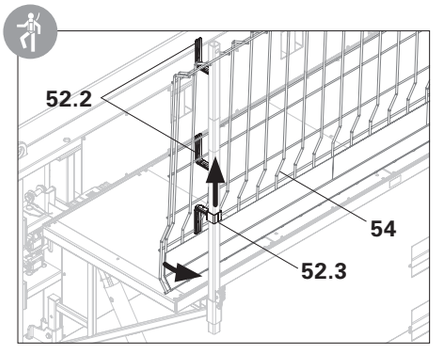


Fig. B5.01

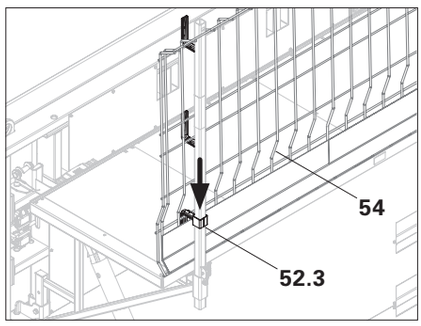


Fig. B5.02

Stopend Guardrail MXK

Assembly

1. Release wedges (55.1) of the Stopend Guardrail MXK (55).
2. Fix locking bolt (55.4) on the centre of the bracket. (Fig. B5.03 + B5.03a)
3. Place Stopend Guardrail MXK on the Guardrail Post MXK (52). (Fig. B5.03 + B5.03a)
4. The mounting (55.2) must rest on the Scaffold Deck. (Fig. B5.03a)
5. Position support (55.3) of the Stopend Guardrail MXK on the centre of Bracket MXK. (Fig. B5.03 + B5.03a)
6. Stopend Guardrail is secured by striking both wedges on the Guardrail Post MXK (52) with a hammer. (Fig. B5.04)

→ Stopend Guardrail MXK is now mounted. (Fig. B5.05)

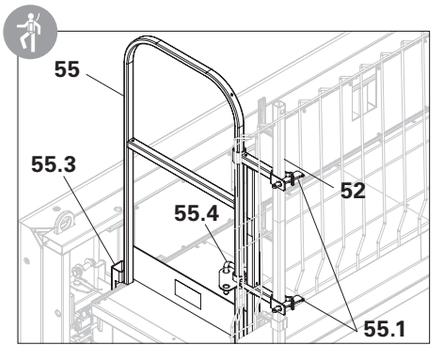


Fig. B5.03

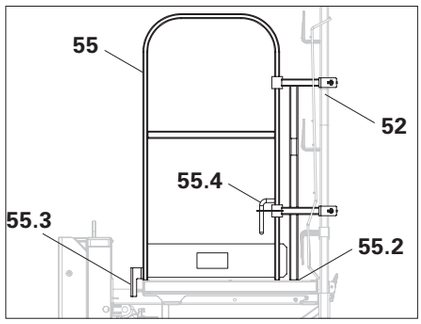


Fig. B5.03a

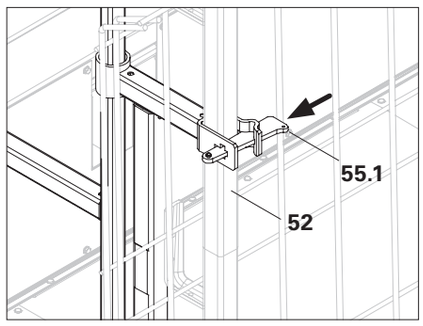


Fig. B5.04

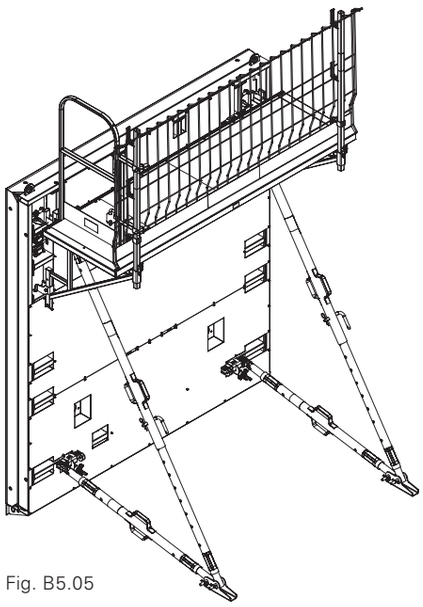


Fig. B5.05

Access Ladder

Assembly

1. Release Triple Wingnut (56.1) on the Ladder Connector (56) and pull out Hook Tie (56.2) towards the rear.
2. Place Ladder Connector on the panel strut (26) so that the Hook Tie (56.2) engages the connecting hole. (Fig. B5.06)
3. Tighten the Ladder Connector using the Triple Wingnut (56.1). (Fig. B5.07)
4. Remove tube linch pin (56.3) from the Ladder Connector. (Fig. B5.08)
5. Attach the Ladder to the mounting bracket (53.1) of the Hatch and simultaneously in the Ladder Connector. (Fig. B5.10)
6. Insert the tube linch pin (56.3) into the Ladder Connector (Fig. B5.11).
   → Access Ladder is now mounted.

Have all tube linch pins been mounted?

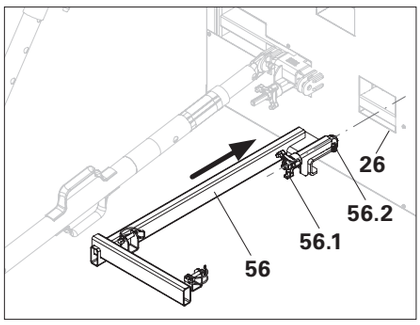


Fig. B5.06

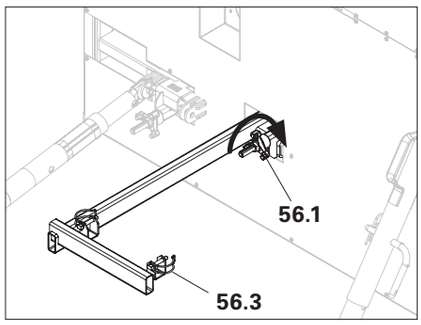


Fig. B5.07

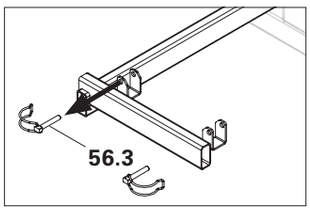


Fig. B5.08

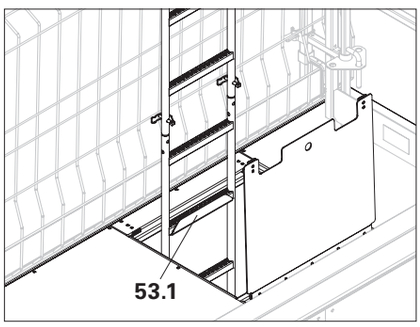


Fig. B5.09

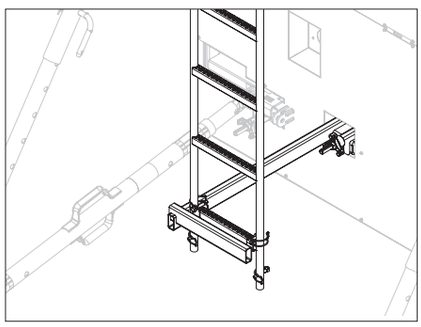


Fig. B5.10

Gap filling

Place timbers (9) between all Scaffold Decks MXK and MXH Heated Formwork.

1. Cut 12 x 4 cm timbers to a length of 2.38 m.
2. Cut out recess area (5.5 x 7 cm) 14.5 cm from the end of the timber for supporting the End Guardrail. (Fig. B5.14)
3. Position timber. (Fig. B5.12 + B5.13)
4. Nail timber to the Scaffold Bracket.
   → Safety installations have now been mounted.

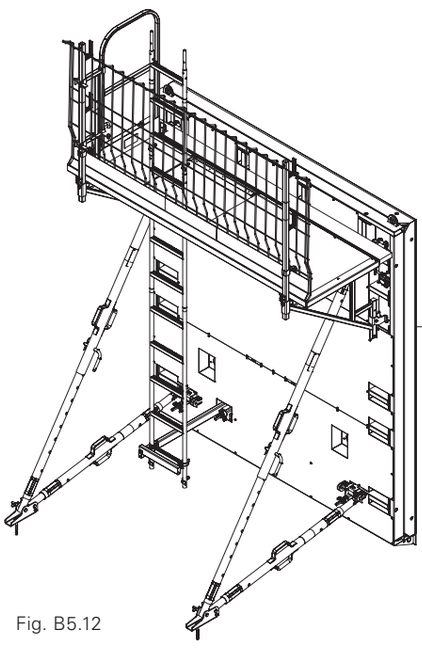


Fig. B5.12

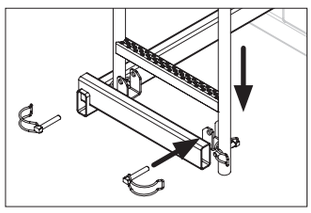


Fig. B5.11

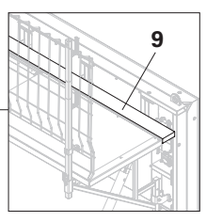


Fig. B5.13

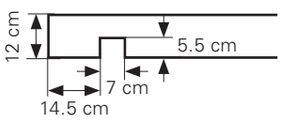


Fig. B5.14

Assembly

1. Erect second Heated Formwork Unit with the crane and connect by means of the Alignment Couplers BFD (30) and Compensation Walers MAR (31). (Fig. B6.01)
2. Mount Base Plate (92), e.g. with PERI Anchor Bolt 14/20 x 130 (93).
3. Using PPE to prevent falling from a height, mount Side Mesh Barrier PMB and Stopend Guardrail MXK, see B5 Safety installations.
4. Release Combi Lifting Gear from the load-bearing point of the crane eye or lifting hook.
5. Erect additional Heated Formwork Units in the same way.

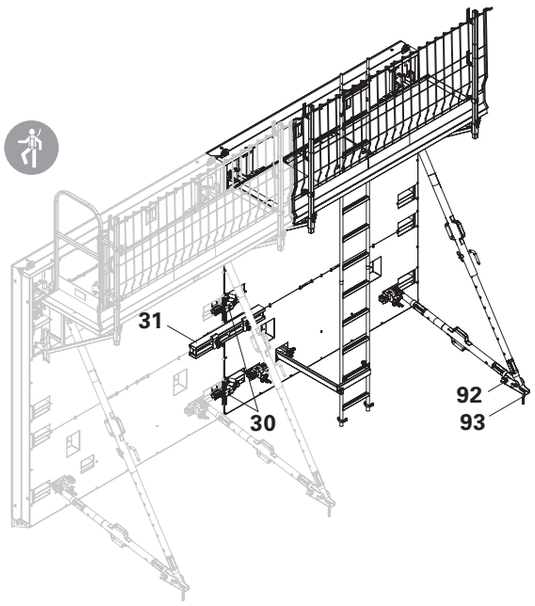


Fig. B6.01

Closing formwork

Erect the closing formwork in the same way. (Fig. B6.03)
Progressively fix the Base Plates of the Push-Pull Props.
Progressively install Tie Rods, see A4 Tie technology as well as Instructions for Assembly and Use for MAXIMO MX 15 / MX 18.
PPE must be worn when assembling safety installations.

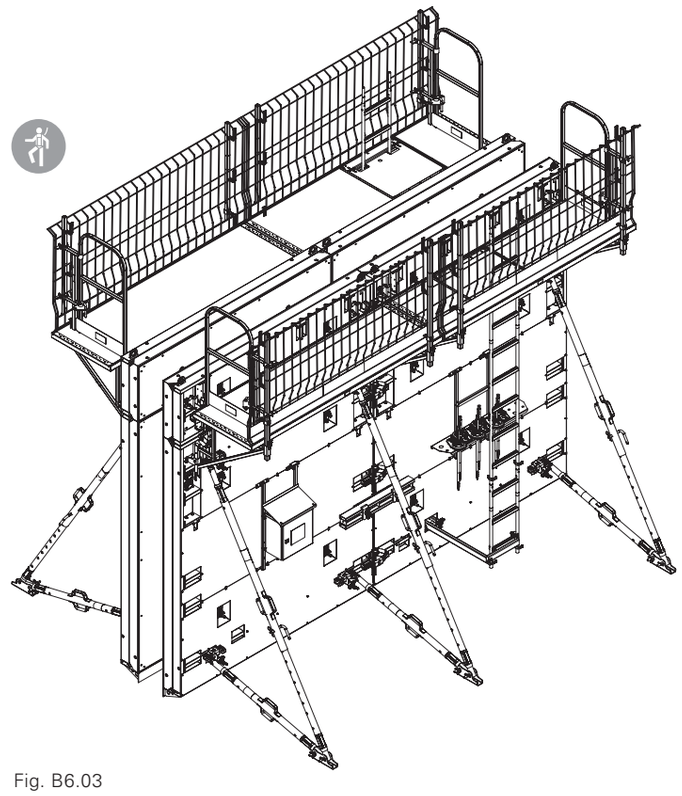


Fig. B6.03

Tie Holder

for reliable storage of tie rods during the moving procedure. (Fig. B6.06)

Assembly

1. Insert 4 hooks (34.1) of the tie holder (34) into the mounting slots (24) of the Heated Panel. (Fig. B6.04 + B6.05)
   → Adjustment bolt (34.2) is pressed down.
2. Push tie holder to the right.
   → Adjustment bolt engages and is secured.

The adjustment bolt (34.2) must be engaged in the mounting slot.
If the spring force is missing, the tie holder must not be used!

Danger of falling objects!
Only tie rods may be accommodated!

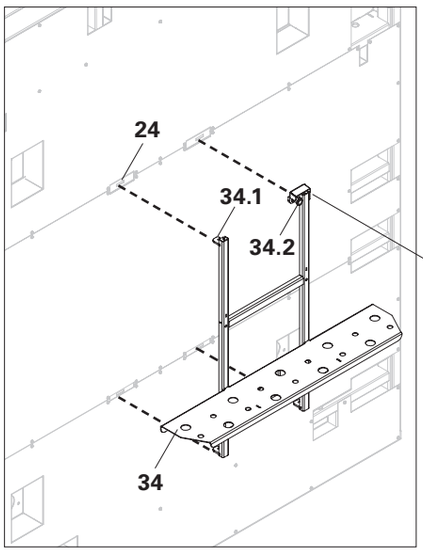


Fig. B6.04

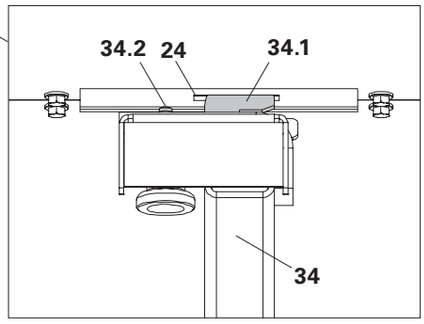


Fig. B6.05

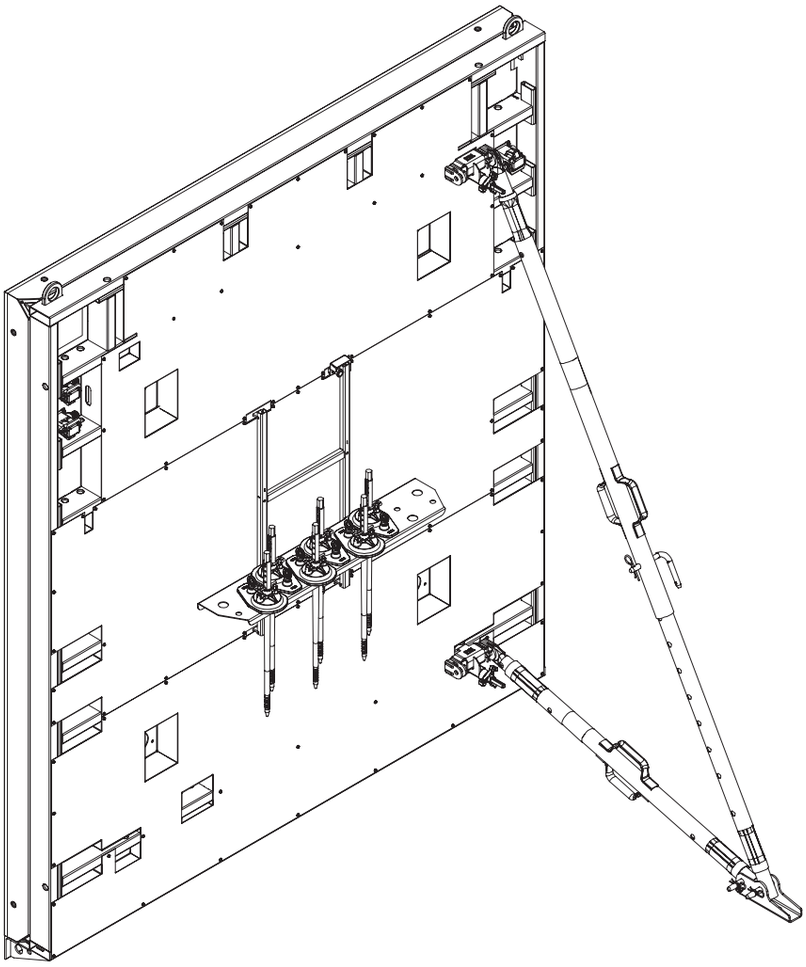


Fig. B6.06

C1 Heating system – technical data

Switch cabinet

Power supply
3-phase alternating current 400 V /
50 - 60 Hz
Connected load max. 7200 W
Maximum current consumption 12.5 A
Protection Class 1
IP 66

Connection
CEE plug 400 V, 16 A, 6h

Main switch
3-phase, mechanical separation +N (62)

Control lamps
3 energy displays (64)
1 fault indicator (63)
(Fig. C1.01)

Safeguards
3 x 16 A, Tripping Characteristic B (69)

3-phase residual-current protection device 25 A (68)
Conventional tripping current 30 mA
4 auxiliary switches

Control system
Omron Temperature Control E5BC (67)
(Fig. C1.02)

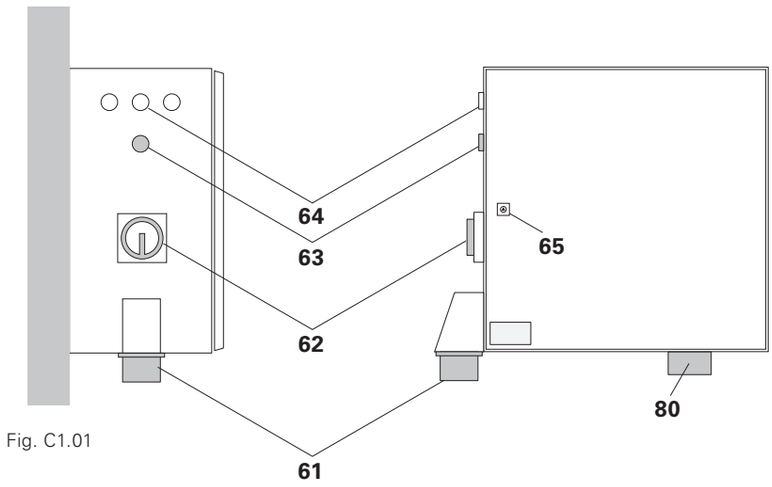


Fig. C1.01

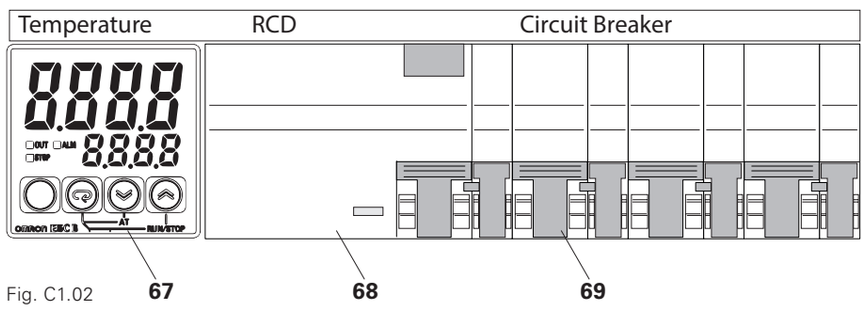


Fig. C1.02

Cables

Connecting cable 2.40 m yellow,
7-pole (76)
Connecting cable 1.20 m orange,
5-pole (77)
Non-interchangeable plug
Protection Class 2
IP 65
Smallest bending radius 7.5 cm
(Fig. C1.03)

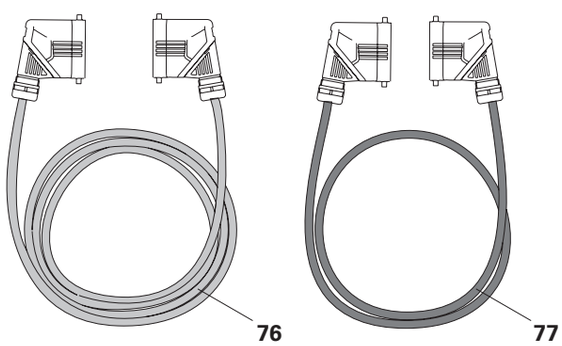


Fig. C1.03

Heating mat

Operating voltage 230V
Current consumption 100 - 800 W
(Fig. C1.04)

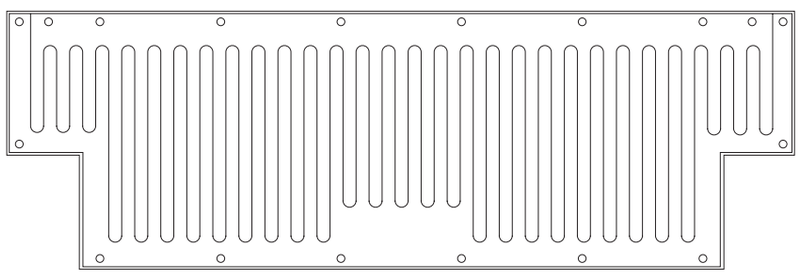


Fig. C1.04

Switch cabinet

- **Carry out all work on electrical installations only when disconnected from the mains; disconnect all supply and connecting lines. Switch off the main switch.**
- **Secure main switch against unintentional re-start, e.g. by means of a padlock.**
- **Do not use damaged cables or components.**

Assembly

1. Insert 4 hooks (33.1) of the switch cabinet holder (33) into the mounting slots (24) of the Heated Panel. (Fig. C2.01 + C2.02)
   → Adjustment bolt (33.2) is pressed down.
2. Push switch cabinet holder to the right.
   → Adjustment bolt engages and is secured.

The adjustment bolt must be engaged in the mounting slot.
If the spring force is missing, the switch cabinet must not be used!

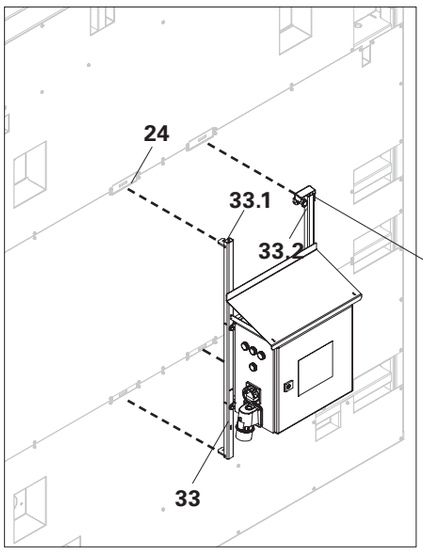


Fig. C2.01

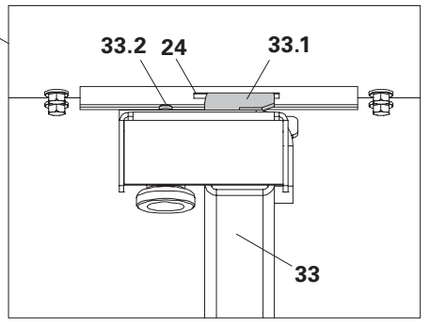


Fig. C2.02

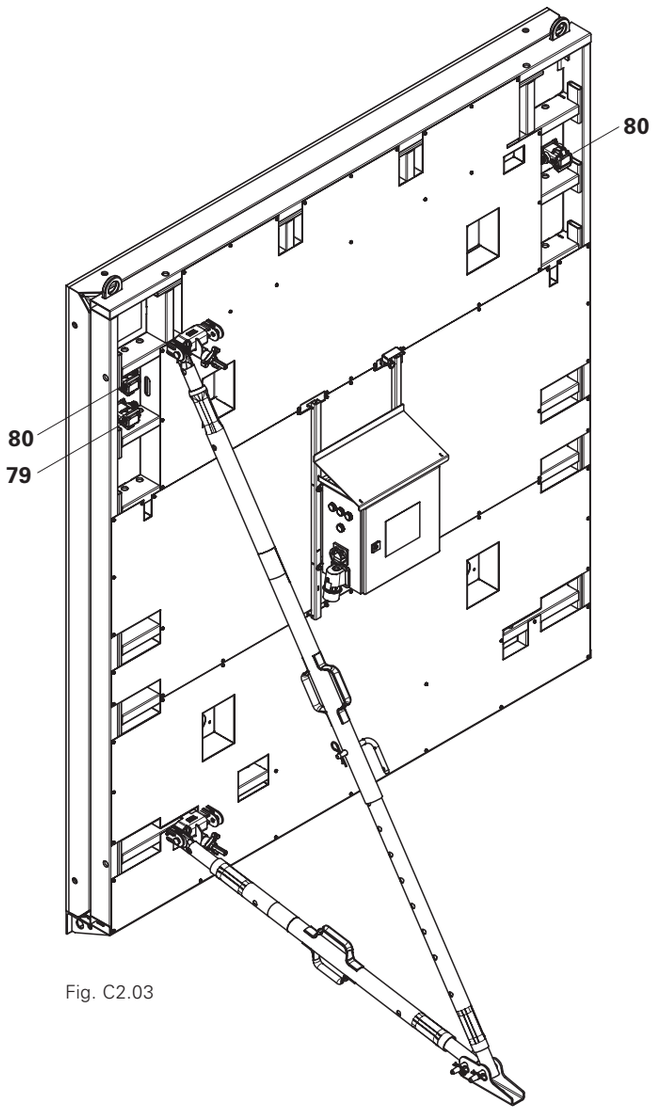


Fig. C2.03

Cable connections

Firstly, connect the Heated Formwork Panels with each other, then with the switch cabinet.
Then connect the supply line from the construction site distributor to the switch cabinet.

Connections
Standard Heated Panels:
1 input socket (male) (79)
2 output sockets (female) (80)
(Fig. C2.04)

Extension Heated Panels:
1 input socket (male) (79)

Cables
Connecting Cable MXH yellow, 2.40 m (76)
Connecting cable orange, 1.20 m (77)
(Fig. C2.05)
Both cables are equipped with non-interchangeable couplings (male / female). When coupling, select the appropriate coupling side.

Switch cabinet

61	Plug coupling 400 V, 16 A
62	Main switch
63	Fault indicator, red
64	Energy display, white
65	Switch cabinet lock
66	Type plate

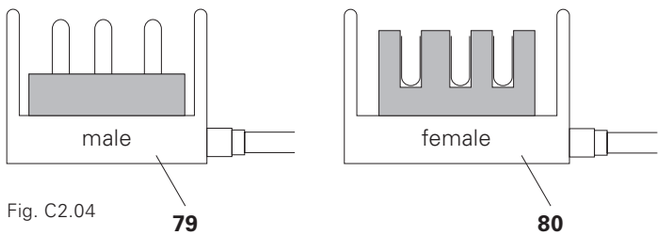


Fig. C2.04

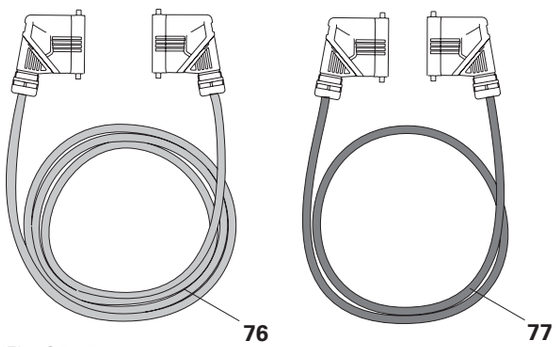


Fig. C2.05

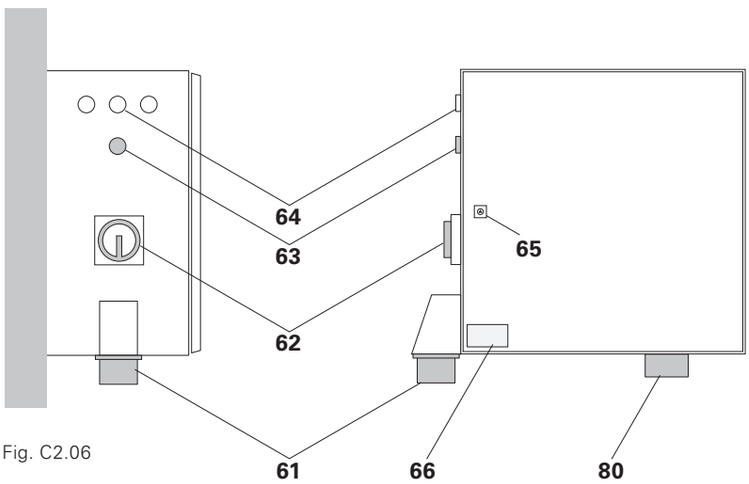


Fig. C2.06

Establishing connections

Dry the sockets and plugs before coupling.
Lock plug in place in the socket.

1. Connect the yellow connecting cable (76) from the output socket of the control cabinet (60) to the input socket (79) of the first Standard Heated Panel.
2. Using the orange connecting cables (77), connect the output sockets (80) of the Standard Heated Panel to the input sockets (79) of the Extension Heated Panel and the second Standard Heated Panel.
3. Correspondingly connect additional Extension Heated Panels and Standard Heated Panels. (Fig. C2.07)

Primary and closing formwork with a total length of max. 4.80 m can be connected via the stopend formwork. (Fig. C2.08)
Protect connecting cable from protruding reinforcement steel.

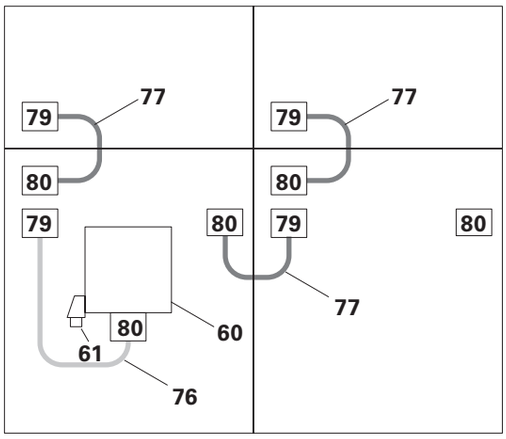


Fig. C2.07

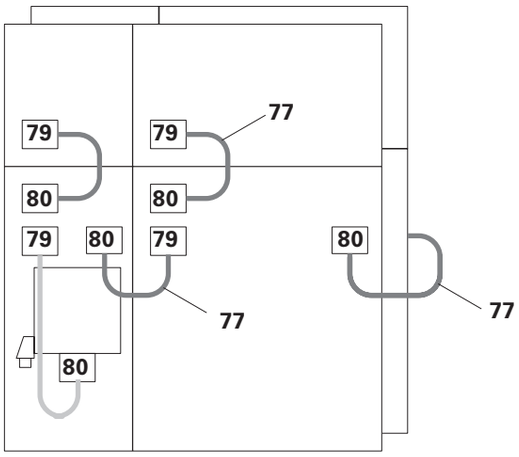


Fig. C2.08

Connecting the site power supply

1. Switch off the switch cabinet main switch.
2. Then connect the cable with CEE plug 400 V, 16 A to the plug coupling (61) of the switch cabinet.
3. Protect supply cable with cable bridges.
4. Connect cable to the construction site main cabinet.

– **Risk of burns! Heating wire and frame parts can become very hot! Do not touch during operations!**
– **Heating will remain hot for some time after being switched off! Allow to cool, wear protective gloves!**

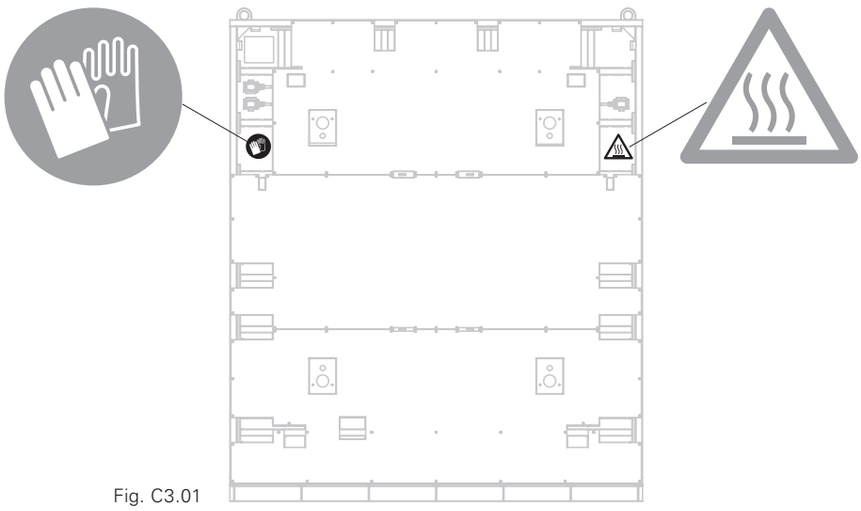


Fig. C3.01

Switching on the heating system

1. Turn main switch on switch cabinet to the “ON” position.
2. Once a week, press test button (68.1) on the residual current circuit breaker. (Fig. C3.02) Residual current circuit beaker must be triggered. If the circuit breaker is not triggered, the switch cabinet is not to be operated.
3. Switch on the residual current circuit breaker (68.2) again.
   → Heating system is operational

Adjusting the temperature

After switching on, the control unit (67) displays the actual temperature value (70) and set value (71). The heating system becomes operational when the actual temperature value is lower than the set point. (Fig. C3.02a)
The set point can be configured from +20°C to +80°C.

To increase the set point, press the “Up” (75) button.

To lower the set point, press the “Down” (76) button.

For additional settings of the control unit, see the manufacturer’s data sheet in the appendix.

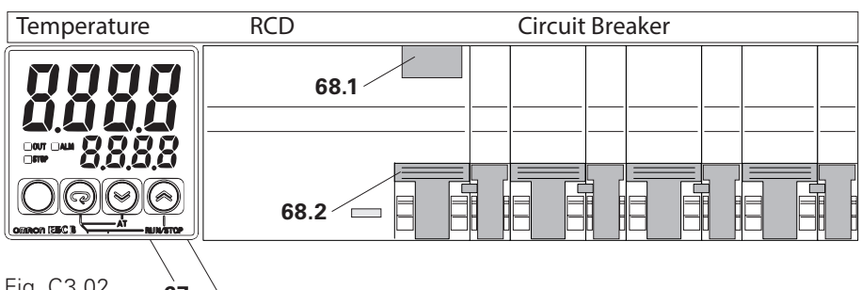


Fig. C3.02

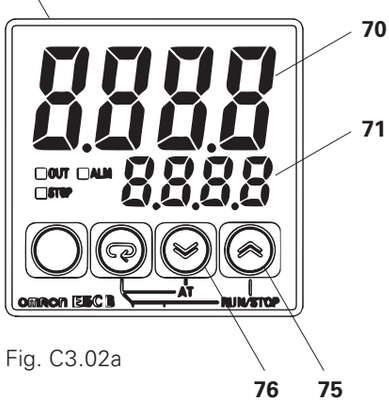


Fig. C3.02a

Switching off the heating system

Turn main switch on switch cabinet to the “OFF” position.
→ Heating system is now de-activated.

Troubleshooting

Malfunction	Cause	Measures
Control unit without function.	– No power supply from the construction site main cabinet. – Feed line is defective. – Main switch is switched off. – Residual current circuit breaker or fuses have tripped.	– Ensure power supply. – Change cable. – Switch on main switch. – Check heating system, switch on fuse or residual current circuit breaker again.
One Heated Panel does not function.	– Connecting cable not properly connected or defective. – Defective heating mat.	– Insert connection cable correctly and secure. – Replace the Heated Panel.
Control unit works, but no heating power on all Heated Panels.	– Control unit incorrectly set. – Connecting cable to the first Heated Panel is not correctly connected or defective. – Orange connecting cable used from the switch cabinet to the first Heated Panel.	– Adjust the setting. – Connect the connecting cable to the correct sockets, replace the defective cable. – Use the yellow connecting cable from the switch cabinet to the first Heated Panel.
Temperature is too low.	– Control unit is not set correctly. – Defective temperature sensor on the first Heated Panel. – Ambient temperature is too low.	– Set control unit to a higher temperature. – Check the actual temperature value for plausibility, replace Heated Panel if necessary. – No remedial measure possible.
Temperature is too high.	– Control unit is not set correctly. – Defective temperature sensor on the first Heated Panel.	– Set control unit to a lower temperature. – Check the actual temperature value for plausibility, replace Heated Panel if necessary.
Fuses trip.	– Overload due to too many connected Heated Panels.	– Uncouple excess Heated Panels, install an additional switch cabinet.
Residual current circuit breaker is triggered.	– Moisture penetration causes earth fault. – Damaged wiring or heating wire causes earth fault.	– Allow Heated Panels to dry. – Replace damaged cable or Heated Panel.

Maximum transport units

MXH Heated Formwork can be moved as Heated Formwork Units.
When moving Heated Formwork Units with Extension MX 30, MXH 60 + MX 30 or MXH 120, a maximum of 2 units with a width of 2.40 m is permitted.

Permissible transportation units: see Fig. D1.01.

Attach crane lifting gear to the depicted load-bearing points.

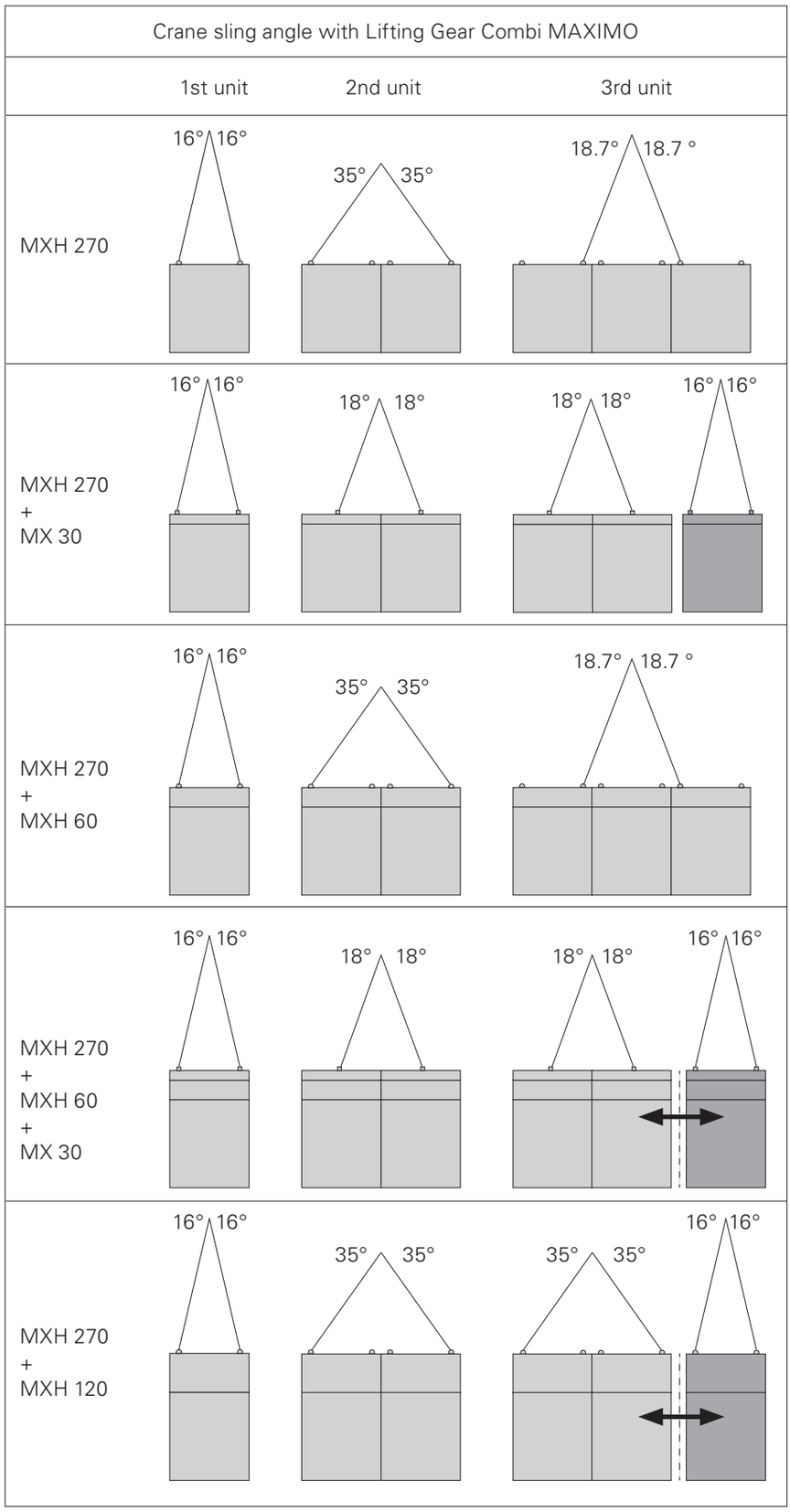


Fig. D1.01

Moving with the crane

- **Danger due to suspended load!**
- **Take into account the permissible load-bearing capacity of the crane lifting gear and the crane capacity!**
- **Follow Instructions for Use for Lifting Gear Combi MX and Lifting Hook MAXIMO 1.5 t!**

- **Heating will remain hot for some time after being switched off! Allow to cool, wear protective gloves!**

For working areas at great heights choose a safe working area, e.g. mobile scaffold.

Heated Panel MXH
Move Heated Panel Unit, with or without Extension MXH, using the load-bearing point of the Crane Eye (10.2). (Fig. D1.02)

Panel MX 30
Use Lifting Hook MAXIMO 1.5 t for the Heated Panel Unit with Panel MX 30 as extension. (Fig. D1.02a)

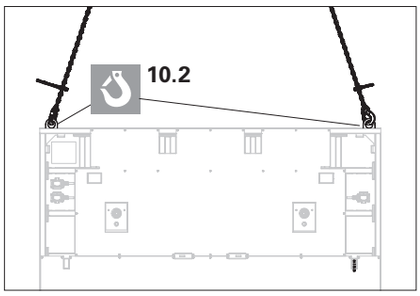


Fig. D1.02

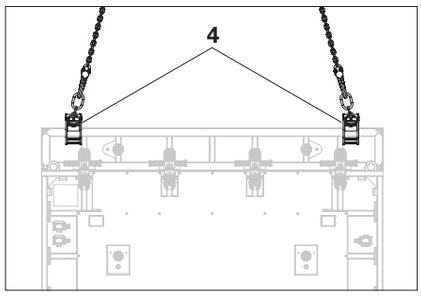


Fig. D1.02a

Assembly

1. Disconnect supply line from the construction site main cabinet (78) on the switch cabinet.
2. If necessary, uncouple connecting cable (76) on both sides of the lifting units. Close sockets with protective caps, insert couplings of the connecting cables against each other and place them in a secure position.
3. Remove Tie MX and store in tie holder.
4. Attach Combi Lifting Gear to the load-bearing point of the Crane Eye (10.2) or Lifting Hook (4).
5. Remove Alignment Couplers BFD (30) and Compensation Walers MAR 85 (31) from the lifting units. (Fig. D1.03)
6. Remove anchor bolts (93) from the Base Plates.
7. Move panel and clean, see E1 Cleaning.
8. Transport panel to next place of operation by crane.
9. Mount Base Plate (92), e.g. with PERI Anchor Bolt 14/20 x 130 (93).
10. Release Combi Lifting Gear from the load-bearing point of the Crane Eye or Lifting Hook.

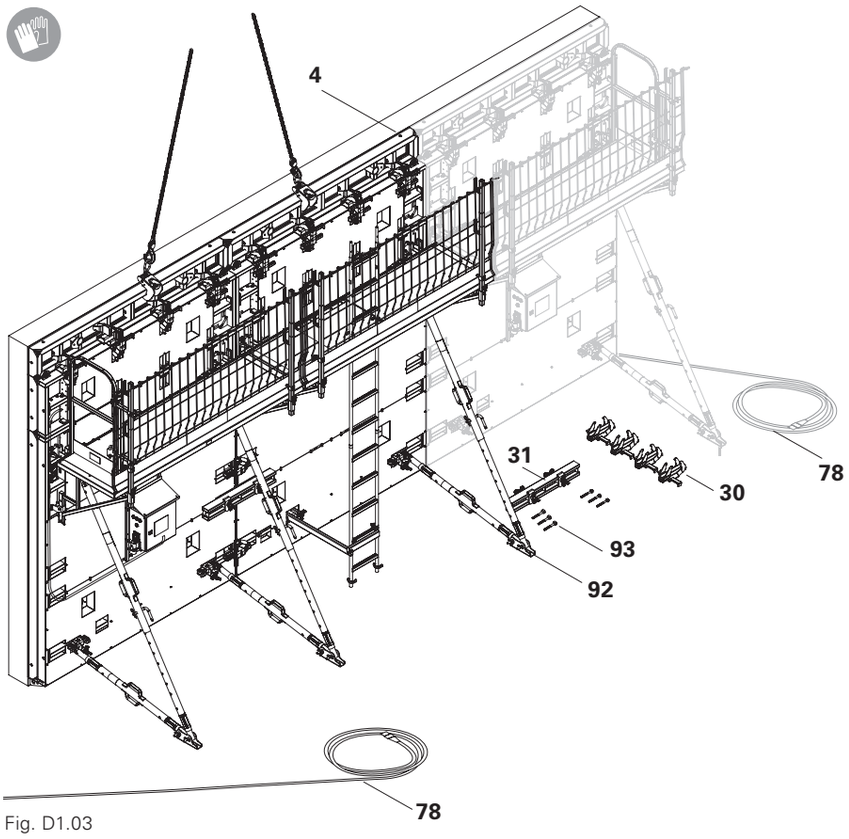


Fig. D1.03

D2 Dismantling Heated Panel Units

- **Danger due to suspended load!**
- **Take into account the permissible load-bearing capacity of the crane lifting gear and the crane capacity!**
- **Follow Instructions for Use for Lifting Gear Combi MX and Lifting Hook MAXIMO 1.5 t!**

For working areas at great heights choose a safe working area, e.g. mobile scaffold.

Dismantling the units

1. Uncouple all supply and connecting cables on both sides. Close sockets with protective caps, insert couplings of the connecting cables against each other.
2. Dismantle the switch cabinet (33). Remove adjustment bolts (33.2) and push the switch cabinet to the left. (Fig. D2.02)
3. Remove the switch cabinet from the front. (Fig. D2.03)
4. Remove Tie MX from the Tie Holder.
5. Dismantle the Tie Holder in the same way as the switch cabinet.
6. Using PPE when dismantling the Side Mesh Barriers, Stopend Guard-rails and Access Ladders on vertical-ly-positioned units.
7. Attach Combi Lifting Gear to the load-bearing point of the Crane Eye or MAXIMO Lifting Hook.
8. Separate Heated Formwork Units from the vertical joint by removing Compensation Walers MAR and Alignment Couplers BFD, see D1 Moving Heated Formwork Units.
9. Release Base Plates of the Push-Pull Props on the Heated Formwork Unit which is to be moved.
10. Transport Heated Formwork Unit to designated area for dismantling.

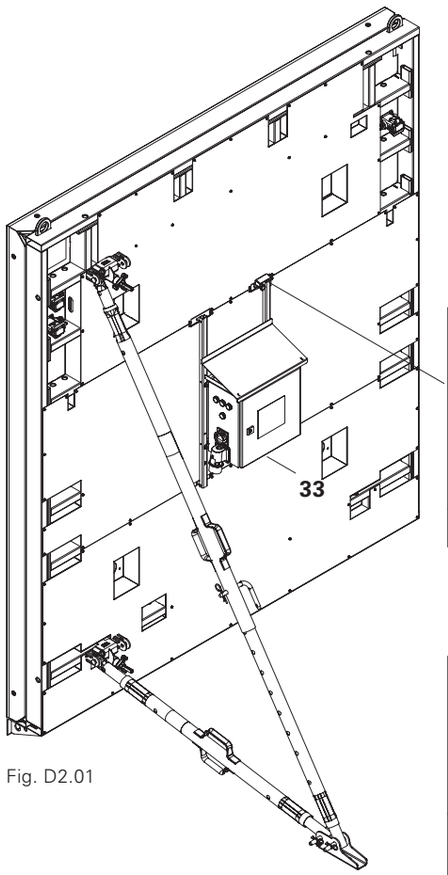


Fig. D2.01

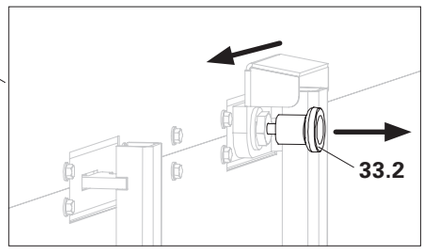


Fig. D2.02

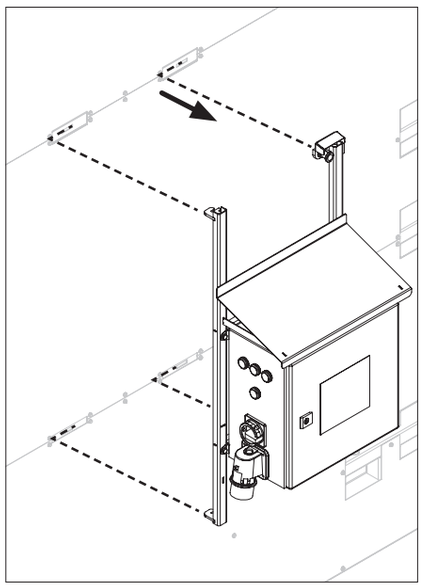


Fig. D2.03

Disassembling Heated Panel Units

1. Lay out timber (9) or planking as a base. The assembly area must be even.
2. Position Heated Panel Unit on support timbers using the crane.
3. Dismantle Guardrail Post MXK (52), Scaffold Deck MXK (51) and Scaffold Bracket MXK (50), see Instructions for Assembly and Use for the MAXIMO MXK Bracket System.
4. Dismantle Push-Pull Props (90), Kickers (91) and Base Plates (92).
5. Dismantle Connectors RS MXK (32).
6. Dismantle extensions by releasing the Alignment Couplers BFD.

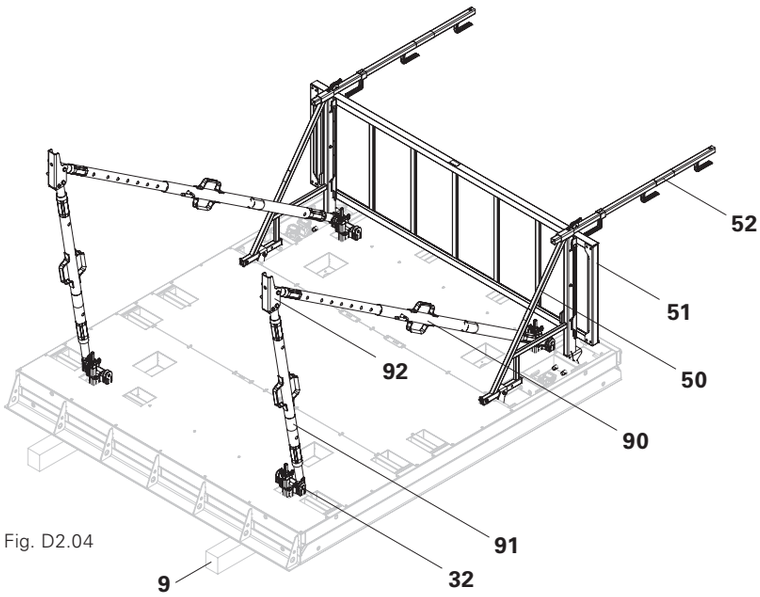


Fig. D2.04

Dismantling Heated Formwork Panels

1. Attach the Heated Formwork Panel MXH (10) with the Lifting Gear Combi MX (3) to the transport openings (10.9). (Fig. D2.05b)
2. Unscrew and remove 2 fixing bolts (37) each from all 4 corners. (Fig. D2.05a)
3. Lift Heated Panel MXH using the crane and move to the specified cleaning area. (Fig. D2.05)
4. Attach Panel MX in the same way and move to the specified cleaning area.

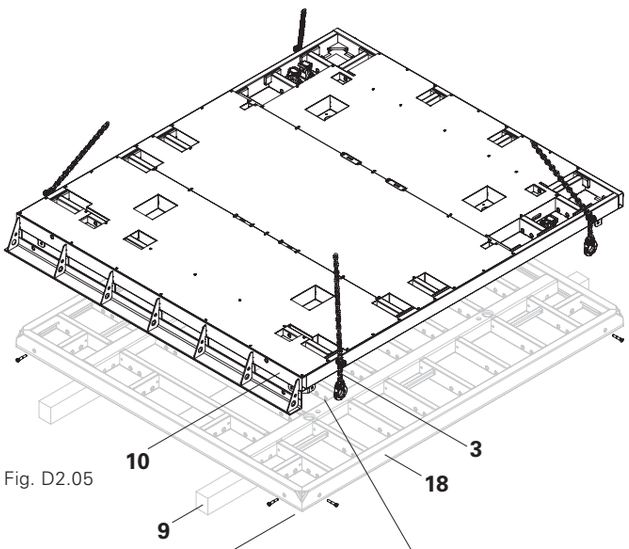


Fig. D2.05

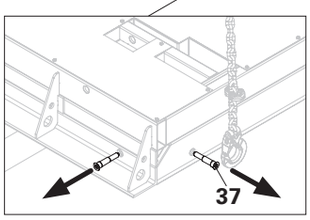


Fig. D2.05a

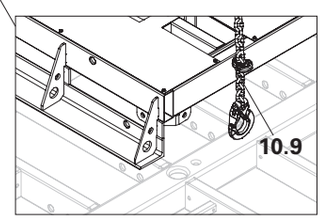


Fig. D2.05b

Cleaning

In order to maintain the value and operational readiness of the MXH Heated Formwork over a long period of time, the formwork should be carefully handled at all times.

- **Risk of slipping! Heated Panels are slippery to handle in wet or snowy conditions. Do not walk on Heated Panels!**
- **Never clean Heated Panels with a high pressure water jet.**
- **Do not use any oil or solvent-based cleaning agents.**

The electrical equipment of the Heating Panels is designed for non-pressurized water sprayed from all directions.

Cleaning the rear side of the Heated Panel.
Whenever possible, immediately remove all fresh concrete with a cloth. Remove hardened concrete by means of a spatula.
Other forms of dirt are to be removed using water and a cloth.

Cleaning of the heated side
Do not subject the heating wires to any mechanical stress. Only use a damp cloth for cleaning. Avoid direct exposure to water.

Clean frame parts with spatula, cloth and water.

Do not spray release agent on the frame parts but spread by means of a cloth. Ensure that the release agent does not come into contact with heating wires, cables, support fabric and insulating foam.

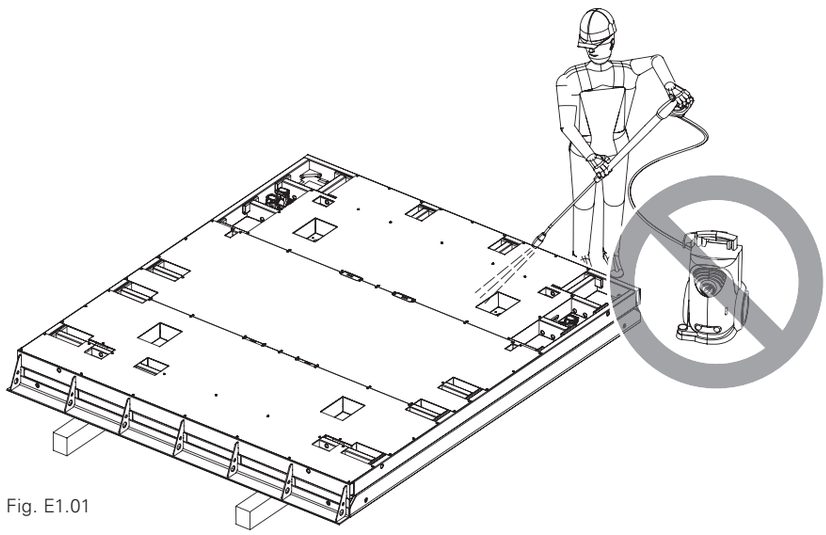


Fig. E1.01

E1 Cleaning and maintenance

Maintenance

- **Carry out all work on electrical installations only when disconnected from the mains; disconnect all supply and connecting lines. Switch off the main switch.**
- **Secure main switch against switch-on, e.g. by means of a padlock.**
- **Do not use damaged cables or components.**
- **All work on electrical installations going beyond the described maintenance scope, must be carried out by a qualified electrician only.**

Ensure the cover sheets are securely fitted, fasten or change if necessary. Replace damaged insulation foam.

Check the heating pads for signs of damage and ensure they are securely fitted, fasten if necessary or have them changed by a qualified electrician.

Carry out a visual check of the heating wires and electrical connections for damaged insulation. If there are signs of damage, do not put Heated Panels into operation and have them changed by a qualified electrician.

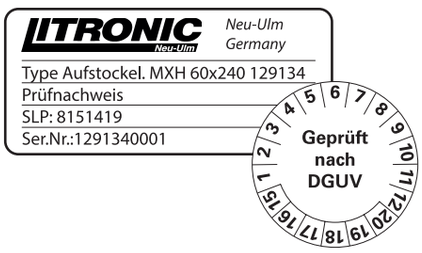
Check sockets and connecting cables for signs of damage and proper insulation. Check sealing lips of the sockets for signs of damage and flexibility, if need be have them repaired by a qualified electrician.

Periodic inspections

All electrical components of the MXH Heated Formwork have been inspected and furnished with an inspection plate according to DGUV (German Statutory Accident Insurance).
The inspection plate indicates the month and date of the last inspection.

Once a year, an insulation test, protective conductor test, and a working current measurement of the whole MXH Heated Formwork is to be carried out by a qualified electrician.

In addition, all relevant national provisions must be complied with.



Test Device MXH

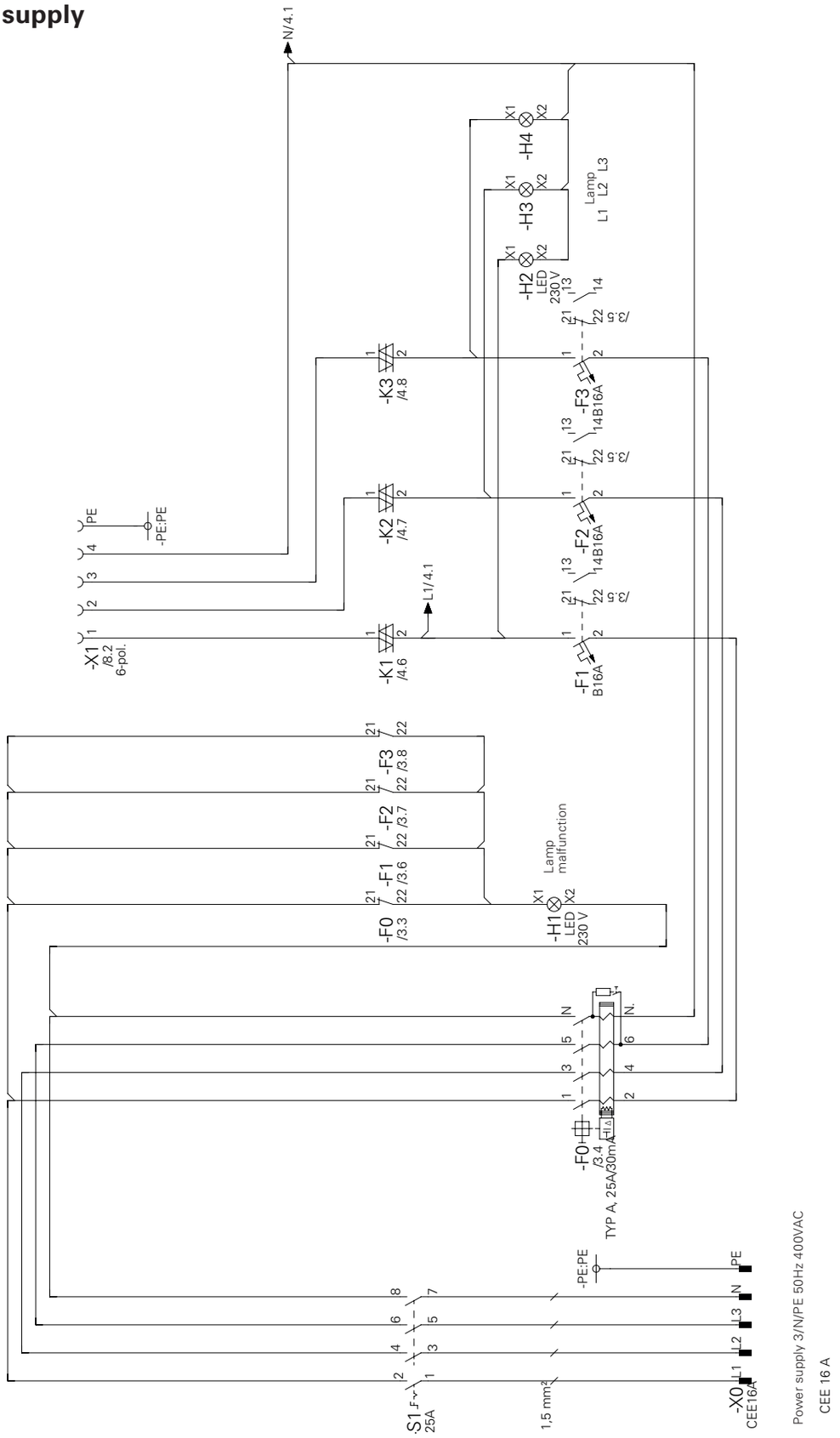
The Test Device MXH is available for the function test.
It tests the electrical function of:
- Heated Panels,
- Extension Heated Panels,
- connector cables (yellow),
- connecting cables (orange).

Tests carried out:
- insulation,
- earthing,
- functionality of the heating mats,
- functionality of the temperature sensor.

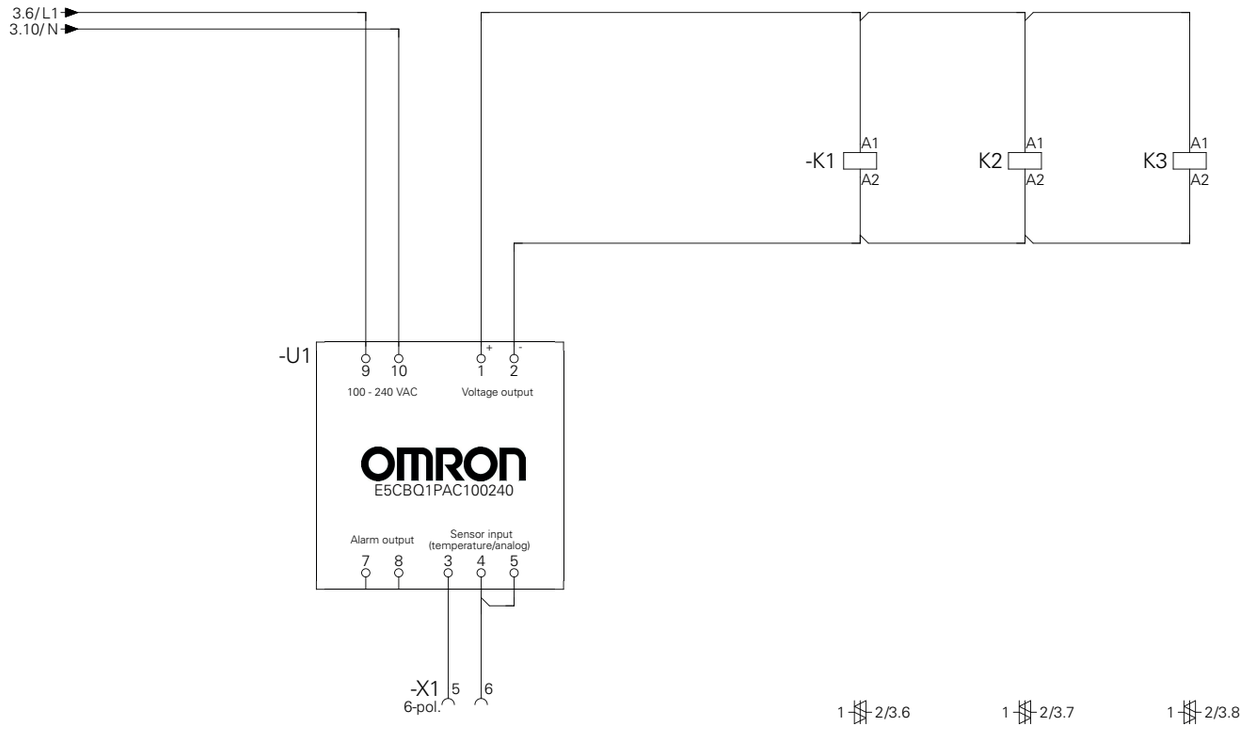
For more information, refer to the Instructions for Use for the Test Device MXH.

Appendix

Power supply

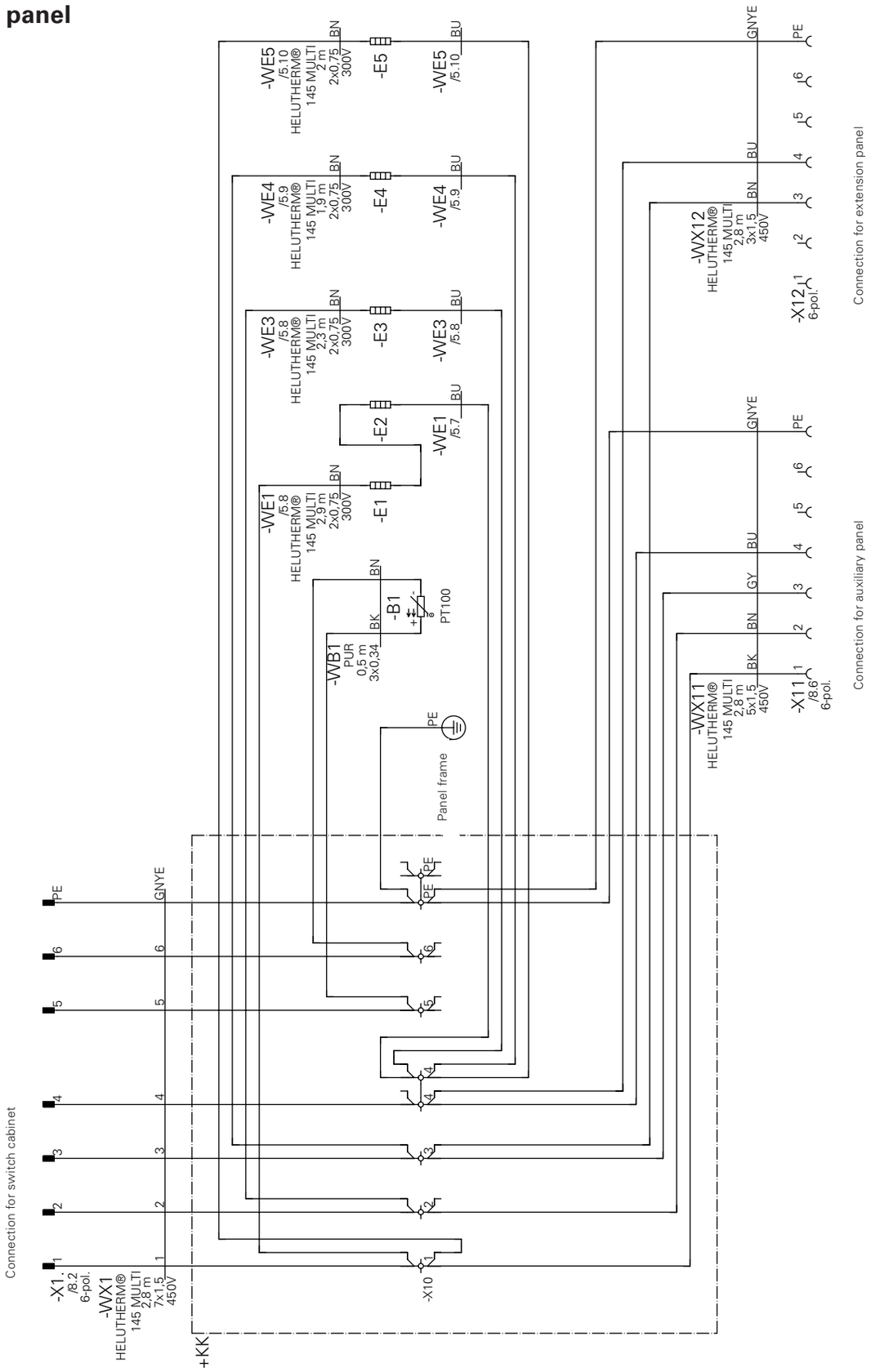


Control system



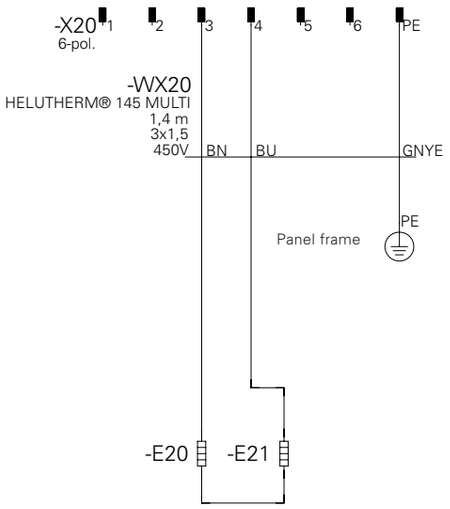
F1 Circuit diagrams

Heated panel

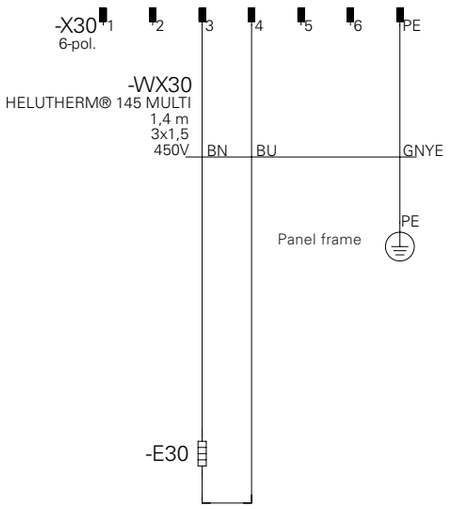


F1 Circuit diagrams

Large extension panel

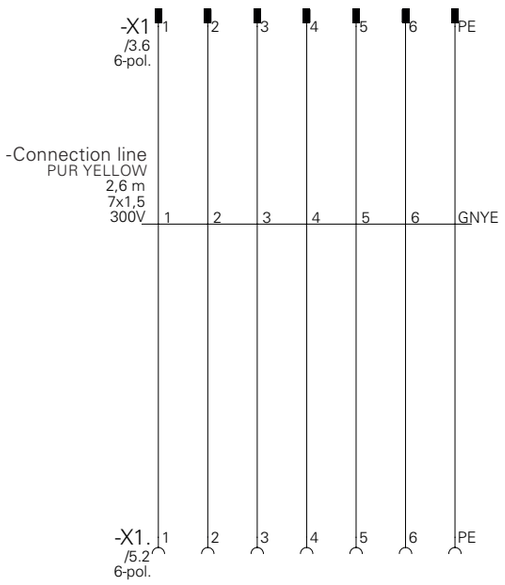


Small extension panel

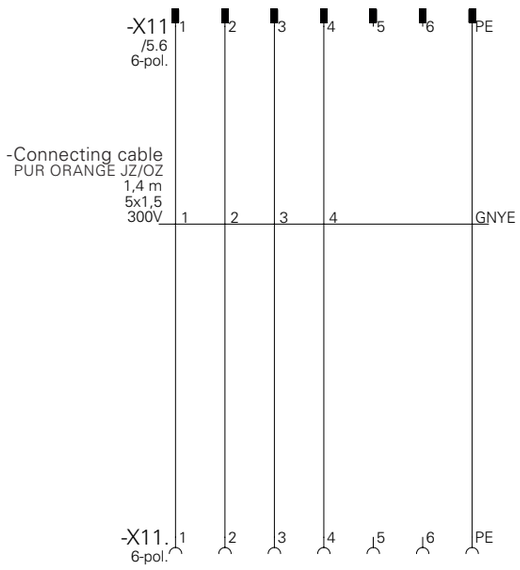


F1 Circuit diagrams

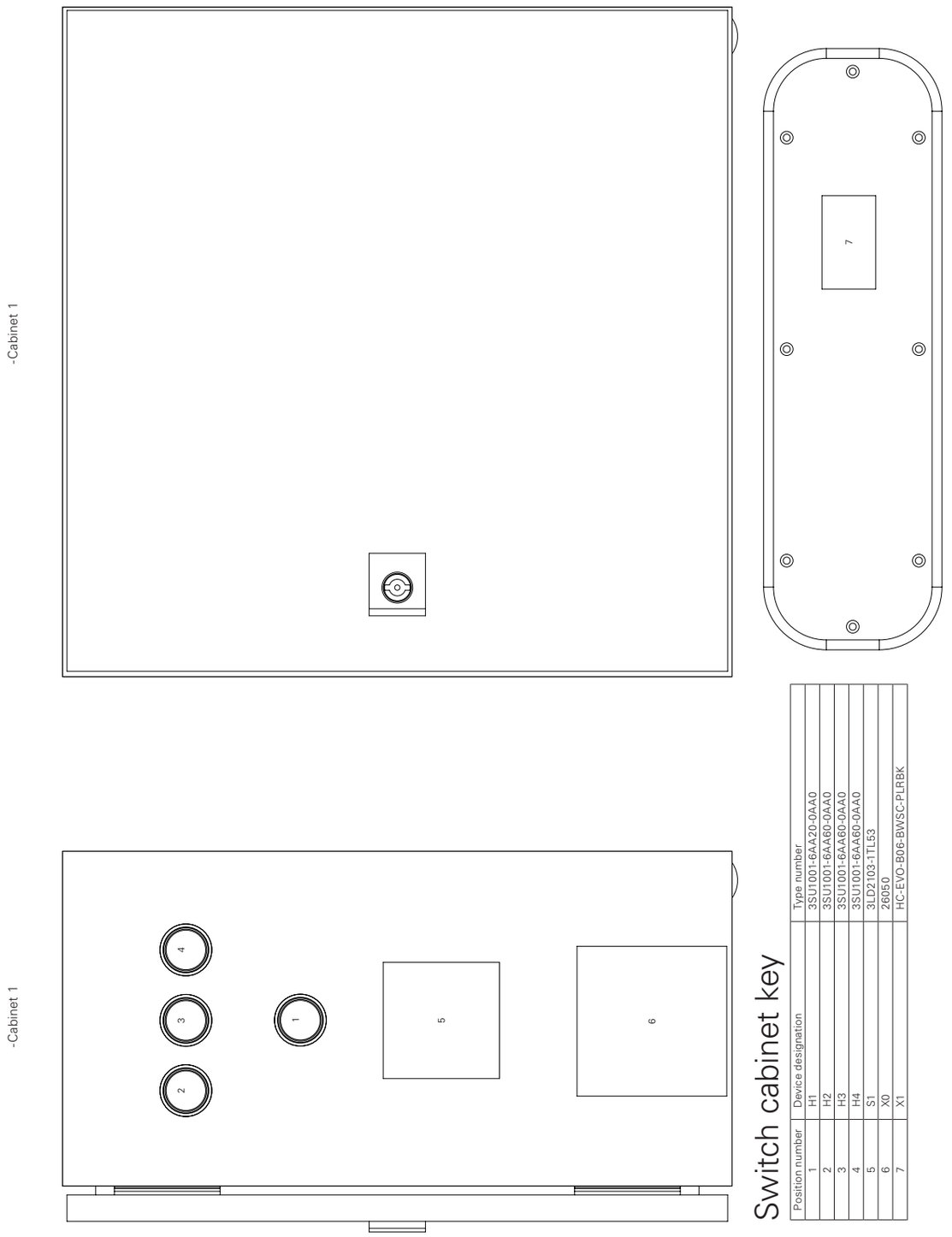
Connecting cable, yellow



Connecting cable, orange



F2 Switch cabinet



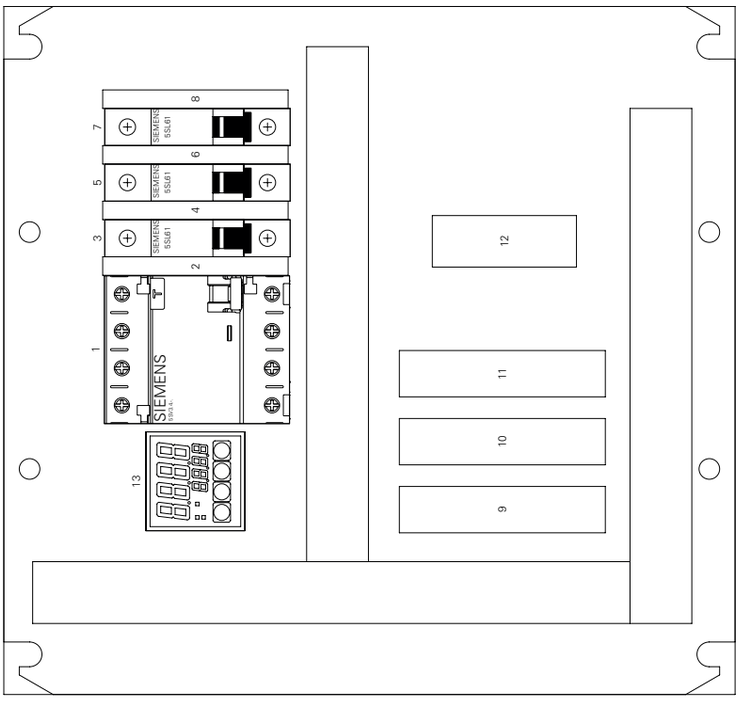
Switch cabinet key

Position number	Device designation	Type number
1	H1	3SU1001-6AA20-0AA0
2	H2	3SU1001-6AA60-0AA0
3	H3	3SU1001-6AA60-0AA0
4	H4	3SU1001-6AA60-0AA0
5	S1	3LD2103-1TL53
6	X0	26050
7	X1	HC-EVO-B06-BWSC-PLRBK

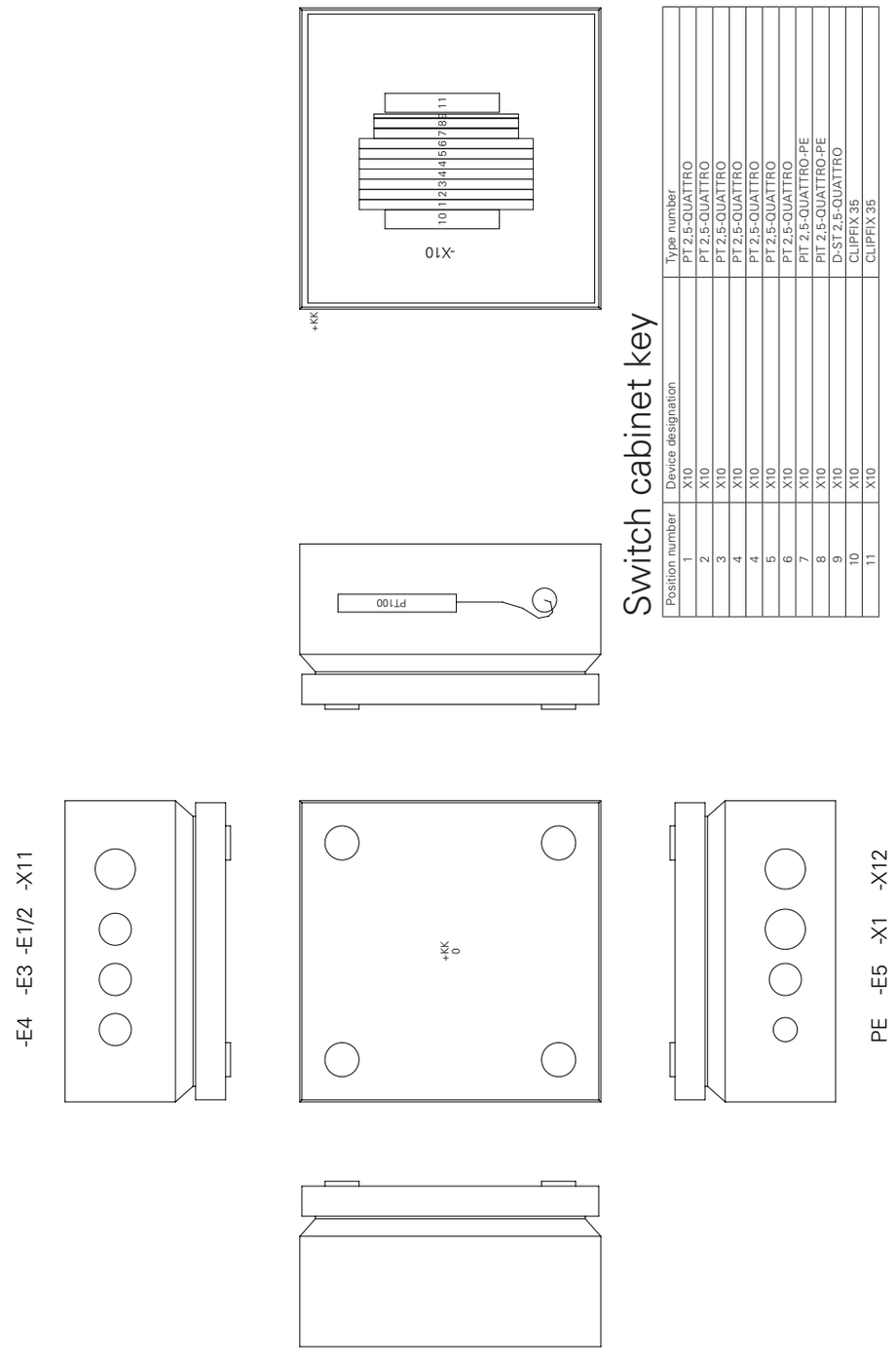
F2 Switch cabinet

Switch cabinet key

Position number	Device designation	Type number
1	F0	5SV3342-6
2	F0	5ST3010
3	F1	5SL6116-6
4	F1	5ST3010
5	F2	5SL6116-6
6	F2	5ST3010
7	F3	5SL6116-6
8	F3	5ST3010
9	K1	3RF2320-1DA44
10	K2	3RF2320-1DA44
11	K3	3RF2320-1DA44
12	PE	KM07E
13	U1	E5CBQ1PAC100240



F2 Switch cabinet



Switch cabinet key

Position number	Device designation	Type number
1	X10	PT 2,5-QUATTRO
2	X10	PT 2,5-QUATTRO
3	X10	PT 2,5-QUATTRO
4	X10	PT 2,5-QUATTRO
4	X10	PT 2,5-QUATTRO
5	X10	PT 2,5-QUATTRO
6	X10	PT 2,5-QUATTRO
7	X10	PIT 2,5-QUATTRO-PE
8	X10	PIT 2,5-QUATTRO-PE
9	X10	D-ST 2,5-QUATTRO
10	X10	CLIPFIX 35
11	X10	CLIPFIX 35

Components list

F01_002_LIT

Device designation Position	Quantity Signal conversion input	Designation	Type number Order number	Manufacturer Supplier	Item number Function text	Pos
-Connection line	3 m	PUR Control Cable PUR YELLOW JZ 7G1.5 mm² GE	PUR-GELB 22214	HELU HELU	HELU.22214	
-F0	1	RCBO TYPE A 15/4 30MA 4TE SENTRON residual current operated device	5SV3342-6 5SV3342-6	SIE SIE	SIE.5SV3342-6	
-F0	1 Qty	Auxiliary switch 1make contact 1break contact for circuit breaker	5ST3010 5ST3 010	SIE SIE	SIE.5ST3010	
-F1	1	CIRCUIT BREAKER 230/400V 6KA, 1 POLE, B, 16A	5SL6116-6 5SL6116-6	SIE SIE	SIE.5SL6116-6	
-F1	1 Qty	Auxiliary switch 1make contact 1break contact for circuit breaker	5ST3010 5ST3 010	SIE SIE	SIE.5ST3010	
-F2	1	CIRCUIT BREAKER 230/400V 6KA, 1 POLE, B, 16A	5SL6116-6 5SL6116-6	SIE SIE	SIE.5SL6116-6	
-F2	1 Qty	Auxiliary switch 1make contact 1break contact for circuit breaker	5ST3010 5ST3 010	SIE SIE	SIE.5ST3010	
-F3	1	CIRCUIT BREAKER 230/400V 6KA, 1 POLE, B, 16A	5SL6116-6 5SL6116-6	SIE SIE	SIE.5SL6116-6	
-F3	1 Qty	Auxiliary switch 1make contact 1break contact for circuit breaker	5ST3010 5ST3 010	SIE SIE	SIE.5ST3010	
-H1	1	SIGNAL LAMP, RED SIRIUS ACT control and signalling devices	3SU1001-6AA20-0AA0 3SU1001-6AA20-0AA0	SIE SIE	SIE.3SU1001-6AA20-0AA0	
-H1	1	LED MODULE, RED SIRIUS ACT control and signalling devices	3SU1401-1BF20-3AA0 3SU1401-1BF20-3AA0	SIE SIE	SIE.3SU1401-1BF20-3AA0	
-H1	1	HOLDER FOR 3 MODULES, PLASTIC	3SU1500-0AA10-0AA0 3SU1500-0AA10-0AA0	SIE SIE	SIE.3SU1500-0AA10-0AA0	
-H2	1	SIGNAL LAMP, WHITE SIRIUS ACT control and signalling devices	3SU1001-6AA60-0AA0 3SU1001-6AA60-0AA0	SIE SIE	SIE.3SU1001-6AA60-0AA0	
-H2	1	LED MODULE, WHITE SIRIUS ACT control and signalling devices	3SU1401-1BF60-3AA0 3SU1401-1BF60-3AA0	SIE SIE	SIE.3SU1401-1BF60-3AA0	
-H2	1	HOLDER FOR 3 MODULES, PLASTIC	3SU1500-0AA10-0AA0 3SU1500-0AA10-0AA0	SIE SIE	SIE.3SU1500-0AA10-0AA0	
-H3	1	SIGNAL LAMP, WHITE SIRIUS ACT control and signalling devices	3SU1001-6AA60-0AA0 3SU1001-6AA60-0AA0	SIE SIE	SIE.3SU1001-6AA60-0AA0	
-H3	1	LED MODULE, WHITE SIRIUS ACT control and signalling devices	3SU1401-1BF60-3AA0 3SU1401-1BF60-3AA0	SIE SIE	SIE.3SU1401-1BF60-3AA0	
-H3	1	HOLDER FOR 3 MODULES, PLASTIC	3SU1500-0AA10-0AA0 3SU1500-0AA10-0AA0	SIE SIE	SIE.3SU1500-0AA10-0AA0	

Components list

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Device designation Position	Quantity Signal conversion input	Designation	Type number Order number	Manufacturer Supplier	Item number Function text	Pos
-H4	1	SIGNAL LAMP, WHITE SIRIUS ACT control and signalling devices	3SU1001-6AA60-0AA0 3SU1001-6AA60-0AA0	SIE SIE	SIE.3SU1001-6AA60-0AA0	
-H4	1	SIGNAL LAMP, WHITE SIRIUS ACT control and signalling devices	3SU1401-1BF60-3AA0 3SU1401-1BF60-3AA0	SIE SIE	SIE.3SU1401-1BF60-3AA0	
-H4	1	HOLDER FOR 3 MODULES, PLASTIC	3SU1500-0AA10-0AA0 3SU1500-0AA10-0AA0	SIE SIE	SIE.3SU1500-0AA10-0AA0	
-K1	1	SEMI-CONDUCTOR 1-PHASE, 20A/48-460V ,4-30V DC SCREW CONNECTION	3RF2320-1DA44 3RF2320-1DA44	SIE SIE	SIE.3RF2320-1DA44	
-K2	1	SEMI-CONDUCTOR 1-PHASE, 20A/48-460V ,4-30V DC SCREW CONNECTION	3RF2320-1DA44 3RF2320-1DA44	SIE SIE	SIE.3RF2320-1DA44	
-K3	1	SEMI-CONDUCTOR 1-PHASE, 20A/48-460V ,4-30V DC SCREW CONNECTION	3RF2320-1DA44 3RF2320-1DA44	SIE SIE	SIE.3RF2320-1DA44	
-PE	1	PE terminal block, 7 terminal points, for DIN mounting rail Brass clamp	KM07E KM07E	HGR HAG	HGR.KM07E	
-S1	1	MAIN SWITCH 4-POLE iu=25, 9.5KW RED-YELLOW	3LD2103-1TL53 3LD2103-1TL53	SIE SIE	SIE.3LD2103-1TL53	
-S1	1	ADDITIONAL SIGN GERMAN/ENGLISH 47MM x 17MM (ACCESSORIES FOR SWITCH 3LD2)	3LD9286-1A 3LD9286-1A	SIE SIE	SIE.3LD9286-1A	
-Cabinet1	1 Qty	Compact switch cabinet B380 x H380 X T210 mm painted, RAL 7035, one door with assembly plate	AE.1380500 1380.500	RIT RIT	RIT.1380500	
-Cabinet1	1 Qty	Wall mounting bracket	SZ.1590000 1590000	RIT RIT	RIT.1590000	
-Cabinet1	5 Qty	End holder	CLIPFIX 35 3022218	PXC PXC	PXC.3022218	
-U1	1	Temperature Controller 100-240VAC PT100	E5CBQ1PAC100240 E5CB-Q1P AC100-240	OMR OMR	OMR.E5CB-Q1P-AC100-240	
-U1	1	DIN Rail Adapter for E5CB-Q1P	Y92F-52 Y92F-52	OMR OMR	OMR.Y92F-52	
-Connecting cable	2 m	PUR Control Cable PUR ORANGE JZ 5G1.5mm2 OR	PUR-ORANGE JZ/OZ 22018	HELU HELU	HELU.22018	
-WE1	3 m	Heat-resistant cable HELUTHERM® 145 MULTI 2x0.75 mm² SW	HELUTHERM® 145 MULTI 53412	HELU HELU	HELU.53412	
-WE3	3 m	Heat-resistant cable HELUTHERM® 145 MULTI 2x0.75 mm² SW	HELUTHERM® 145 MULTI 53412	HELU HELU	HELU.53412	
-WE4	2 m	Heat-resistant cable HELUTHERM® 145 MULTI 2x0.75 mm² SW	HELUTHERM® 145 MULTI 53412	HELU HELU	HELU.53412	

Components list

F01_002_LIT

Device designation Position	Quantity Signal conversion input	Designation	Type number Order number	Manufacturer Supplier	Item number Function text	Pos
-WE5	2 m	Heat-resistant cable HELUTHERM® 145 MULTI 2x0.75 mm² SW	HELUTHERM® 145 MULTI 53412	HELU HELU	HELU.53412	
-WX1	3 m	Heat-resistant cable HELUTHERM® 145 MULTI 7G1.5 mm² SW	HELUTHERM® 145 MULTI 53457	HELU HELU	HELU.53457	
-WX11	3 m	Heat-resistant cable HELUTHERM® 145 MULTI 5G1.5 mm² SW	HELUTHERM® 145 MULTI 53455	HELU HELU	HELU.53455	
-WX12	3 m	Heat-resistant cable HELUTHERM® 145 MULTI 3G1.5 mm² SW	HELUTHERM® 145 MULTI 53453	HELU HELU	HELU.53453	
-WX20	2 m	Heat-resistant cable HELUTHERM® 145 MULTI 3G1.5 mm² SW	HELUTHERM® 145 MULTI 53453	HELU HELU	HELU.53453	
-WX30	2 m	Heat-resistant cable HELUTHERM® 145 MULTI 3G1.5 mm² SW	HELUTHERM® 145 MULTI 53453	HELU HELU	HELU.53453	
-X0	1	Appliance Inlet CEE 16A 5p 400V 6h IP44 for power supply	26050 26050	BAS HAG	BAS.26050	
-X1	1 Qty	Housing	HC-EVO-B06-BWSC-PLRBK 1407622	PXC PXC	PXC.1407622	
-X1	1 Qty	Contact insert	HC-B 06-I-PT-F 1407727	PXC PXC	PXC.1407727	
-X1	1 Qty	Housing	HC-EVO-B06-HLFS-PLBK 1407619	PXC PXC	PXC.1407619	
-X1	1 Qty	Cable screw connection	HC-B-G-M20-PLRBK 1407669	PXC PXC	PXC.1407669	
-X1	1 Qty	Contact insert	HC-B 06-I-PT-M 1407728	PXC PXC	PXC.1407728	
-X1.	1 Qty	Housing	HC-EVO-B06-SHWSC-2SSM32-PLRBK 1407624	PXC PXC	PXC.1407624	
-X1.	1 Qty	Contact insert	HC-B 06-I-PT-M 1407728	PXC PXC	PXC.1407728	
-X1.	1 Qty	Housing	HC-EVO-B06-HLFS-PLBK 1407619	PXC PXC	PXC.1407619	
-X1.	1 Qty	Cable screw connection	HC-B-G-M20-PLRBK 1407669	PXC PXC	PXC.1407669	
-X1.	1 Qty	Contact insert	HC-B 06-I-PT-F 1407727	PXC PXC	PXC.1407727	
-X11	1 Qty	Housing	HC-EVO-B06-SHWSC-2SSM32-PLRBK 1407624	PXC PXC	PXC.1407624	

Components list

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Device designation Position	Quantity Signal conversion input	Designation	Type number Order number	Manufacturer Supplier	Item number Function text	Pos
-X11	1 Qty	Contact insert	HC-B 06-I-PT-F 1407727	PXC PXC	PXC.1407727	
-X11	1 Qty	Housing	HC-EVO-B06-HLFS-PLBK 1407619	PXC PXC	PXC.1407619	
-X11	1 Qty	Cable screw connection	HC-B-G-M20-PLRBK 1407669	PXC PXC	PXC.1407669	
-X11	1 Qty	Contact insert	HC-B 06-I-PT-M 1407728	PXC PXC	PXC.1407728	
-X11.	1 Qty	Housing	HC-EVO-B06-HLFS-PLBK 1407619	PXC PXC	PXC.1407619	
-X11.	1 Qty	Cable screw connection	HC-B-G-M20-PLRBK 1407669	PXC PXC	PXC.1407669	
-X11.	1 Qty	Contact insert	HC-B 06-I-PT-F 1407727	PXC PXC	PXC.1407727	
-X12	1 Qty	Housing	HC-EVO-B06-SHWSC-2SSM32-PLRBK 1407624	PXC PXC	PXC.1407624	
-X12	1 Qty	Contact insert	HC-B 06-I-PT-F 1407727	PXC PXC	PXC.1407727	
-X20	1 Qty	Housing	HC-EVO-B06-SHWSC-2SSM32-PLRBK 1407624	PXC PXC	PXC.1407624	
-X20	1 Qty	Contact insert	HC-B 06-I-PT-M 1407728	PXC PXC	PXC.1407728	
-X30	1 Qty	Housing	HC-EVO-B06-SHWSC-2SSM32-PLRBK 1407624	PXC PXC	PXC.1407624	
-X30	1 Qty	Contact insert	HC-B 06-I-PT-M 1407728	PXC PXC	PXC.1407728	
+KK	1 Qty	Terminal boxes KL without flange, WHD 150x150x80 mm painted, without flange plate and mounting plate RAL 7035	KL.1514510 1514510	RIT RIT	RIT.1514510	
+KK-X10	14 Qty	Feed-through terminal	PT 2,5-QUATTRO 3209578	PXC PXC	PHO.3209578	
+KK-X10	4 Qty	PE terminal	PIT 2,5-QUATTRO-PE 3209594	PHO PHO	PHO.3209594	
+KK-X10	2 Qty	Connection cover	D-ST 2,5-QUATTRO 3030514	PHO PHO	PHO.3030514	
+KK-X10	2 Qty	End holder	CLIPFIX 35 3022218	PXC PXC	PXC.3022218	

Part F EC Declaration of Conformity

EG- Konformitätserklärung

im Sinne der EG-Richtlinie 2004/108/EG
Anhang IV, 2.

In der Gemeinschaft ansässige Person, die bevollmächtigt ist, die technischen Unterlagen zusammenzustellen:

PERI GmbH
Rudolf-Diesel-Strasse 19
89259 Weißenhorn

Beschreibung und Identifizierung des Produktes:

Produktgruppe:	Wandschalung
Typ:	Heizbare Schalung
Artikel-Nr.:	129132 129135 129330
	129133 129370 128874
	129134 129375 128875
Handelsbezeichnung:	MXH Heizbare Schalung

Es wird ausdrücklich erklärt, dass das Produkt allen einschlägigen Bestimmungen der folgenden EG-Richtlinien entspricht:

EMV 2004/108/EG
Die Schutzziele der NSP-RL 2006/95/EG sind eingehalten.

Fundstelle der angewandten harmonisierten Normen entsprechend Artikel 6 Absatz 2:

EN 12100 : 2011:3
EN 13849 - 1 : 2008 -12
EN 60204 - 1 : 2006:6
EN 62395 - 1 : 2006:9

Weißenhorn, 05.10.2015

Hersteller
PERI GmbH
Postfach 1264
89259 Weißenhorn

Leitung Produktentwicklung

Dipl.-Ing. Rainer Bolz
PERI GmbH

Part F EC Declaration of Conformity

This document is a translation into
English from the German original.

EC Declaration of Conformity

as defined in EC Directive 2004/108/EC
Appendix IV, 2.

Person residing within the Community authorised to compile the relevant technical documentation:

PERI GmbH
Rudolf-Diesel-Strasse 19
89259 Weissenhorn / Germany

Description and identification of the product:

Product group:	Wall Formwork
Type:	Heated Formwork
Item no.:	129132 129135 129330 129133 129370 128874 129134 129375 128875
Trade name:	MXH Heated Formwork

This explicitly states that the product fulfils all relevant provisions of the following EC Directives:

EMC 2004/108/EC
The safety objectives of NSP-RL 2006/95/EC have been complied with.

Reference to the harmonised standards used, as referred to in Article 6 paragraph 2:

EN 12100 : 2011:3
EN 13849 - 1 : 2008 -12
EN 60204 - 1 : 2006:6
EN 62395 - 1 : 2006:9

Weissenhorn, 05.10.2015

Manufacturer
PERI GmbH
P.O. Box 1264
89259 Weissenhorn / Germany

Head of Product Development

Dipl. -Ing.Rainer Bolz
PERI GmbH

PERI

Temperature Controller
E5CB (48 × 48 mm)

Ideal for heater control, these Temperature Controllers offer the highest control performance at surprisingly low cost!

Easy to Read with One of the Largest Character Displays Anywhere.

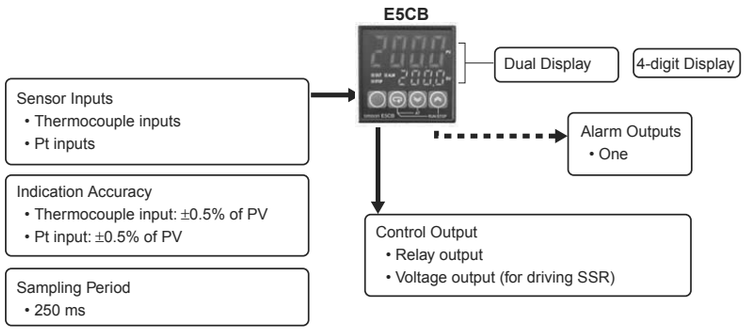
- Improved visibility with character height of approx. 16 mm.
- Depth beyond front panel: Only 60 mm.
- Fewer parameters for simple setup.
- Faster sampling at 250 ms.
- High reliability with a three-year warranty.

48 × 48 mm

NEW

⚠ Refer to *Safety Precautions* on page 8.

Main I/O Functions



Model Number Structure

Model Number Legend

E5CB-□1□□
1 2 3 4

1. Control Output
R: Relay output: 250 VAC, 3 A
Q: Voltage output (for driving SSR): 12 VDC, 21 mA
2. Alarm
1: Relay output: 250 VAC, 1 A (resistive load)
3. Sensor type
TC: Thermocouple (K, J, T, R, or S)
P: Platinum resistance thermometer (Pt100)
4. Power Supply Voltage
Blank: 100 to 240 VAC
D: 24 VAC/VDC

OMRON 1

E5CB

Ordering Information

Temperature Controllers

Size	Power supply voltage	Input type	Alarm output	Control output	Model
E5CB 48 × 48 mm	100 to 240 VAC	Thermocouple	1	Relay output	**E5CB-R1TC**
		Platinum resistance thermometer			**E5CB-R1P**
		Thermocouple		Voltage output (for driving SSR)	**E5CB-Q1TC**
		Platinum resistance thermometer			**E5CB-Q1P**
	24 VAC/VDC	Thermocouple		Relay output	**E5CB-R1TCD**
		Platinum resistance thermometer			**E5CB-R1PD**
		Thermocouple		Voltage output (for driving SSR)	**E5CB-Q1TCD**
		Platinum resistance thermometer			**E5CB-Q1PD**

Accessories (Order Separately)

Terminal Cover

Model	E53-COV19

Front Cover

Type	Model
Hard Front Cover	**Y92A-48B**
Soft Front Cover	**Y92A-48D**

USB-Serial Conversion Cable

Model	E58-CIFQ2

Mounting Adapter (Included)

Model	Y92F-49

Adapter

Model	Y92F-45

Note: 1. Use this Adapter when the Front Panel has already been prepared for the E5B□.
2. Only black is available.

Waterproof Packing (Included)

Model	Y92S-P6

Unit Seal

Model	Y92S-L2

Specifications

Ratings

Power supply voltage		100 to 240 VAC 50/60 Hz, 24 VAC 50/60 Hz, or 24 VDC
Operating voltage range		85% to 110% of rated supply voltage
Power consumption		Approx. 3.5 VA (100 to 240 VAC) Approx. 3.5 VA (24 VAC) Approx. 2.5 W (24 VDC)
Sensor input		Models with thermocouple inputs Thermocouple: K, J, T, R, or S (JIS C 1602-1995, IEC60584-1) Models with platinum resistance thermometer inputs Platinum resistance thermometer: Pt100 (JIS C 1604-1997, IEC60751)
Control output	**Relay output**	SPST-NO, 250 VAC, 3 A (resistive load), electrical life: 100,000 operations, minimum applicable load: 5 V, 10 mA
	Voltage output (for driving SSR)	Output voltage: 12 VDC +25%/–15% (PNP), max. load current: 21 mA, with short-circuit protection circuit
Alarm output	**Relay output**	SPST-NO, 250 VAC, 1 A (resistive load), electrical life: 100,000 operations, minimum load: 5 V, 10 mA
Control method		ON/OFF control or 2-PID control (with auto-tuning)
Setting method		Digital setting using front panel keys
Indication method		7-segment digital display and individual indicators Character height: 16.2 mm (PV)
Other functions		Temperature input shift, run/stop, protection functions, etc.
Ambient operating temperature		–10 to 55°C (with no condensation or icing)/With a three-year guarantee: –10 to 50°C
Ambient operating humidity		25% to 85%
Storage temperature		–25 to 65°C (with no condensation or icing)

Input Ranges

Models with Thermocouple Inputs

Model (temperature input)	Set value	Input type	Range	
			°C	°F
TC input	0	K	–200 to 1,300	–300 to 2,300
	1		–20.0 to 500.0	0.0 to 900.0
	2	J	–100 to 850	–100 to 1500
	3		–20.0 to 400.0	0.0 to 750.0
	4	T	–200 to 400	–300 to 700
	5		–199.9 to 400.0	–199.9 to 700.0
	6	R	0 to 1,700	0 to 3,000
	7	S	0 to 1,700	0 to 3,000

Default setting: 0
Applicable standards (K, J, T, R, S): JIS C1602-1995 and IEC 60584-1

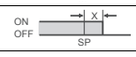
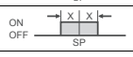
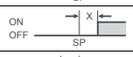
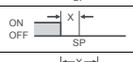
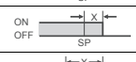
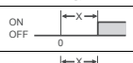
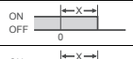
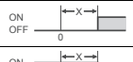
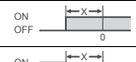
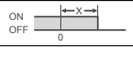
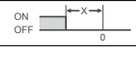
Platinum Resistance Thermometer Input

Model (temperature input)	Set value	Input type	Range	
			°C	°F
Pt input	8	Pt100	–200 to 850	–300 to 1500
	9		–199.9 to 500.0	–199.9 to 900.0

Default setting: 8
Applicable standards (Pt100): JIS C1604-1997 and IEC 60751

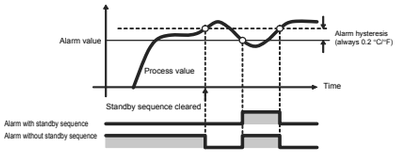
Alarm Types

Select alarm types out of the 11 alarm types listed in the following table.

Setting	Alarm type	Positive alarm value (X)	Negative alarm value (X)	Deviation alarm/absolute value alarm
0	No alarm	Output OFF		
1	Upper/lower limit		Always ON	Deviation alarm
2	Upper limit			Deviation alarm
3	Lower limit			Deviation alarm
4	Upper/lower range		Always OFF	Deviation alarm
5 (See note 2.)	Upper/lower limit standby sequence ON		Always OFF	Deviation alarm
6 (See note 2.)	Upper limit standby sequence ON			Deviation alarm
7 (See note 2.)	Lower limit standby sequence ON			Deviation alarm
8	Absolute value upper limit			Absolute value alarm
9	Absolute value lower limit			Absolute value alarm
10 (See note 2.)	Absolute value upper limit standby sequence ON			Absolute value alarm
11 (See note 2.)	Absolute value lower limit standby sequence ON			Absolute value alarm
12	Do not set.			

Note: 1. The default is 2.
2. Alarms with a Standby Sequence
The alarm is blocked until the first safe-state is reached.
Unwanted alarm during start-up are prevented.

Example: Deviation Lower Limit Standby Sequence ON
The standby sequence is cleared when the alarm OFF condition has been met.



The standby sequence is started again when any of the following conditions is met.

- Operation is started (power is turned ON or operation is switched from stop to run).
- The alarm value is changed.
- The temperature input offset is changed.
- The set point is changed.

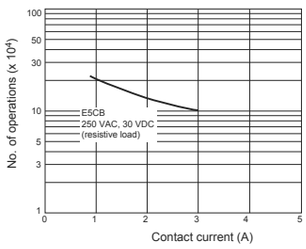
E5CB

Characteristics

Indication accuracy		Thermocouple: (See note 1.) (±0.5% of indicated value or ±1°C, whichever is greater) ±1 digit max. Platinum resistance thermometer: (±0.5% of indicated value or ±1°C, whichever is greater) ±1 digit max.
Influence of temperature (See note 2.)		R and S thermocouple inputs: (±1% of PV or ±10°C, whichever is greater) ±1 digit max. K, J, and T thermocouple inputs: (±1% of PV or ±4°C, whichever is greater) ±1 digit max. Platinum resistance thermometer inputs: (±1% of PV or ±2°C, whichever is greater) ±1 digit max.
Influence of voltage (See note 2.)		
Hysteresis		0.1 to 999.9 (in units of 0.1) °C/°F
Proportional band (P)		0.1 to 999.9 (in units of 0.1) °C/°F
Integral time (I)		0 to 3999 s (in units of 1 s)
Derivative time (D)		0 to 3999 s (in units of 1 s)
Control period		0.5, 1 to 99 s (in units of 1 s)
Alarm setting range		−1999 to 9999 (decimal point position depends on input type)
Input sampling period		250 ms
Affect of signal source resistance		Thermocouple: 0.1°C/Ω max. (100 Ω max.) (See note 3.) Platinum resistance thermometer: 0.6°C/Ω max. (10 Ω max.)
Insulation resistance		20 MΩ min. (at 500 VDC)
Dielectric strength		2,300 VAC, 50 or 60 Hz for 1 min (between terminals with different charge)
Vibration resistance	**Malfunction**	10 to 55 Hz, 20 m/s² for 10 min each in X, Y, and Z directions
	Destruction	10 to 55 Hz, 20 m/s² for 2 hrs each in X, Y, and Z directions
Shock resistance	**Malfunction**	200 m/s², 3 times each in X, Y, and Z directions
	Destruction	300 m/s², 3 times each in X, Y, and Z directions
Weight		Controller: Approx. 100 g, Mounting Bracket: Approx. 10 g
Degree of protection		Front panel: IP66 Rear case: IP20, Terminals: IP00
Memory protection		Non-volatile memory (number of writes: 100,000 times)
Conformed standards	**Certified standards**	UL 61010-1, CSA C22.2 No. 1010-1
	Applicable standards	EN61326, EN61010-1, IEC61010-1 VDE0106, Part 100 (Finger protection), when the terminal cover is mounted.
EMC		EMI — EN61326 Emission Enclosure: — EN55011 Group1 Class A Emission AC Mains: — EN55011 Group1 Class A EMS — EN61326 Immunity ESD: — EN61000-4-2 Immunity RF-interference: — EN61000-4-3 Immunity Burst: — EN61000-4-4 Conduction Disturbance Immunity — EN61000-4-6 Immunity Surge: — EN61000-4-5 Immunity Voltage Dip/Interrupting: — EN61000-4-11

Note: 1. The indication accuracy of K and T thermocouples at a temperature of −100°C max. is ±2°C ±1 digit maximum. The indication accuracy of the R and S thermocouples at a temperature of 200°C max. is ±3°C ±1 digit max.
2. Conditions: Ambient temperature: −10 to 23 to 55°C, Voltage range: −15% to ±10% of rated voltage
3. R, and S sensors: 0.2°C/Ω max. (100 Ω max.)

Electrical Life Expectancy Curve for Relays (Reference Values)



USB-Serial Conversion Cable Specifications

Applicable OS	Windows 2000, XP, Vista, or 7
Applicable software	Thermo Mini
Applicable models	E5CB Series
USB interface standard	USB specification 1.1
DTE speed	38,400 bps
Connector Specifications	Computer: USB (Type A plug) Temperature Controller: Special serial connector
Power supply	Bus power (supplied from the USB host controller)
Power supply voltage	5 VDC
Current consumption	450 mA max.
Output voltage	4.7±0.2 VDC (Supplied from USB-Serial Conversion Cable to the Temperature Controller.)
Output current	250 mA max. (Supplied from USB-Serial Conversion Cable to the Temperature Controller.)
Ambient temperature	0 to 55°C (with no condensation or icing)
Ambient humidity	10% to 80%
Storage temperature	−20 to 60°C (with no condensation or icing)
Storage humidity	10% to 80%
Altitude	2,000 m max.
Weight	Approx. 120 g

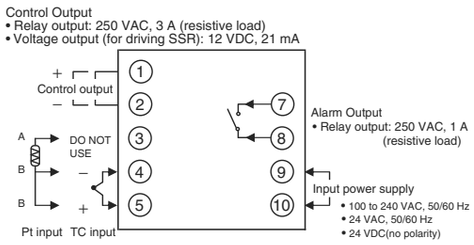
Note: 1. A high-power port is used for the USB port.
2. A driver must be installed on the computer. Refer to the *Instruction Manual* included with the Cable for the installation procedure.

E5CB

External Connections

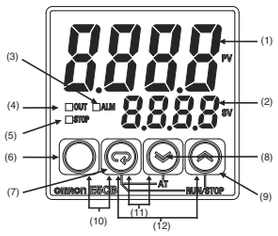
- A voltage output (control output) is not electrically insulated from the internal circuits. When using a grounding thermocouple, do not connect any of the control output terminals to ground. If the control output terminals are connected to ground, errors will occur in the measured temperature values as a result of leakage current.

E5CB



Nomenclature

E5CB



(1)	Display No. 1	Displays the process value (PV) or parameter.	
(2)	Display No. 2	Displays the set point (SP) or parameter setting.	
(3)	ALM	Lit while the alarm is ON. Not lit while the alarm is OFF.	
(4)	OUT	Lit while the control output is ON. Not lit while the control output is OFF.	
(5)	STOP	Not lit during operation. Lit while operation is stopped.	
(6)		Level Key: Changes the setting level.	
(7)		Mode Key: Changes the parameter within the setting level.	
(8)		Down Key: Reduces the setting.	
(9)		Up Key: Increases the setting.	
(10)	+	Press these keys for at least 3 seconds in Operation Level or Adjustment Level to go to Protect Level. Press these keys for at least 1 second in Protect Level to return to Operation Level.	
(11)	+	Press these keys for at least 2 seconds to start or stop autotuning.*1	
(12)	+	Press these keys for at least 2 seconds to start or stop operation.*2	

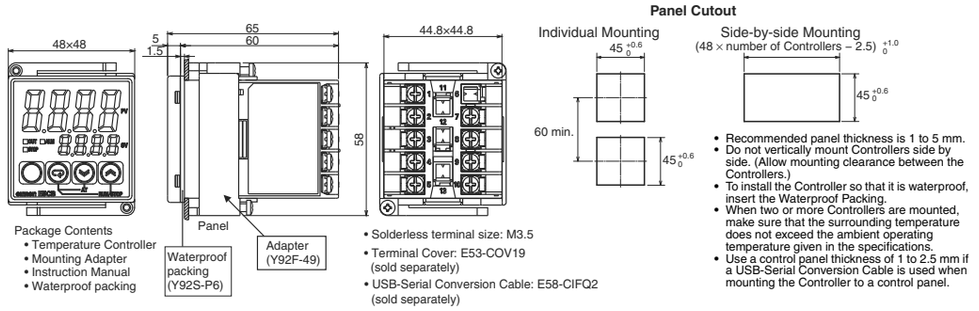
*1: These keys are disabled when starting and stopping autotuning has been disabled with operation control key protection.

*2: These keys are disabled when starting and stopping operation has been disabled with operation control key protection.

Dimensions

(Unit: mm)

E5CB



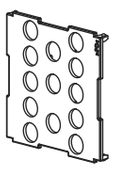
Panel Cutout

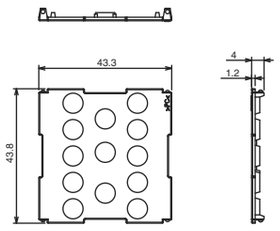
The Support Software port is on the top of the Temperature Controller.
This port is used to connect the Temperature Controller to a personal computer.
The E58-CIFQ2 USB-Serial Conversion Cable is required to make the connection.
For details on connection methods, refer to the *E58-CIFQ2 USB-Serial Conversion Cable Instruction Manual.*
*Do not leave the USB-Serial Conversion Cable connected while using the Temperature Controller.

E5CB

Accessories (Order Separately)

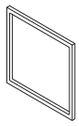
Terminal Cover
E53-COV19





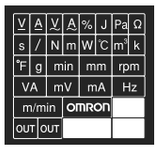
Note: The E53-COV10 cannot be used.

Waterproof Packing
Y92S-P6



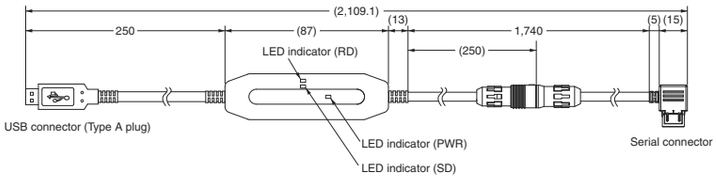
Order the Waterproof Packing separately if it becomes lost or damaged.
The Waterproof Packing can be used to achieve an IP66 degree of protection.
(Deterioration, shrinking, or hardening of the waterproof packing may occur depending on the operating environment. Therefore, periodic replacement is recommended to ensure the level of waterproofing specified in IP66. The time for periodic replacement depends on the operating environment. Be sure to confirm this point at your site. Consider one year a rough standard. OMRON shall not be liable for the level of water resistance if the customer does not perform periodic replacement.)
The Waterproof Packing does not need to be attached if a waterproof structure is not required.

Unit Labels
Y92S-C2



The Unit Labels for the Digital Panel Meter are used.
Use either the °C or °F label from the sheet.

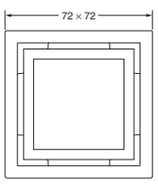
USB-Serial Conversion Cable
E58-CIFQ2

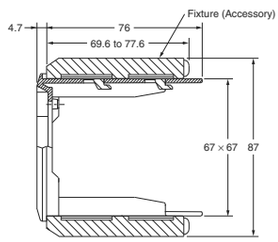


Adapter

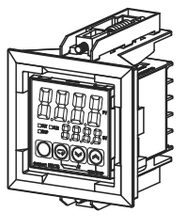
Note: 1. Use this Adapter when the Front Panel has already been prepared for the E5B□.
2. Only black is available.
3. You cannot use the E58-CIFQ2 USB-Serial Conversion Cable if you use the Y92F-45 Adapter. To use the USB-Serial Conversion Cable to make the settings, do so before you mount the Temperature Controller in the panel.

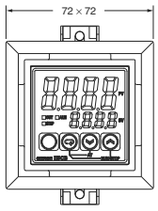
Y92F-45

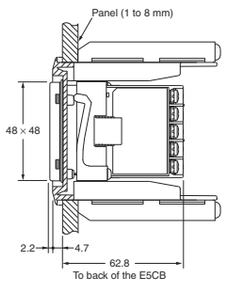




Mounted to E5CB







Front Covers

Front Covers are available.
Use them in the following cases.
- To protect the setting panel from dust and dirt
- To prevent inadvertently touching the setting panel and accidentally changing the settings
- To help protect the front panel from water drops
- To help protect the Temperature Controller from static electricity

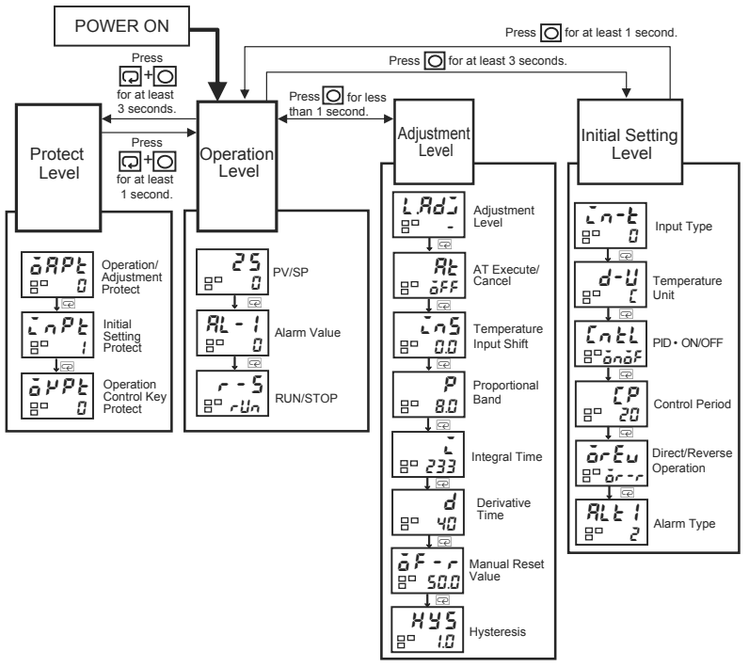
Y92A-48B
(Hard Front Cover)

Y92A-48D
(Soft Front Cover)

Note: 1. The Y92A-48B Front Cover is made from hard plastic. It must be removed to change the settings.
The Y92A-48D Front Cover is made from PVC. You can press the front of the Front Cover to change the settings. However, the Front Cover makes it more difficult to change the settings. Confirm applicability in advance.
2. The Soft Front Cover may deteriorate, shrink, or harden due to the application environment. We recommend replacing it periodically.

Operating Procedure

Parameters
Depending on the settings, some data may not be displayed.
For details, refer to the *Instruction Manual*.
Operation will stop when the level is switched from Operation Level to Initial Setting Level.



Troubleshooting

When an error has occurred, the display No.1 shows the error code.
Take necessary measure according to the error code, referring the following table.

Display	Meaning	Action
S.ERR (S.ERR)	Input error∗**1**	Check the wiring of inputs, disconnections, short circuits and input type.
E111 (E111)	RAM memory error	Turn the power OFF then back ON again.∗**2**
E111/SUM (E111)/(SUM)∗**3**	Non-volatile memory memory error	Press the ▲ and ▼ Keys for at least 3 seconds to initialize the settings and clear the non-volatile memory error.∗**2**

- The control output and the alarm output will turn OFF when an error occurs. (For S.ERR, the alarm output will be processed for a high temperature error.)
- If the input value exceeds the display limit (−1999 to 9999) but it is still within the control range, cccc will be displayed for values under −1999. Under these conditions, the control output and alarm output will operate normally.

∗**1.** This error is displayed only when the process value and set point are displayed.
∗**2.** If the display does not change, the Controller needs to be repaired.
If operation returns to normal, then noise may have caused the problem. Check for noise.
∗**3.** E111 will be displayed on display No. 1 and SUM will be displayed on display No. 2.

E5CB

Safety Precautions

Refer to *Safety Precautions for All Temperature Controllers*.

⚠ CAUTION

Do not touch the terminals while power is being supplied. Doing so may occasionally result in minor injury due to electric shock.	
Do not allow pieces of metal, wire clippings, or fine metallic shavings or filings from installation to enter the product. Doing so may occasionally result in electric shock, fire, or malfunction.	
Do not use the product where subject to flammable or explosive gas. Otherwise, minor injury from explosion may occasionally occur.	
Do not use the Temperature Controller or the USB-Serial Conversion Cable if it is damaged. Doing so may occasionally result in minor electric shock or fire.	
Never disassemble, modify, or repair the product or touch any of the internal parts. Minor electric shock, fire, or malfunction may occasionally occur.	
CAUTION - Risk of Fire and Electric Shock a) More than one disconnect switch may be required to de-energize the equipment before servicing the product. b) Caution: To reduce the risk of fire or electric shock, do not interconnect the outputs of different Class 2 circuits. ✻	
If the output relays are used past their life expectancy, contact fusing or burning may occasionally occur. Always consider the application conditions and use the output relays within their rated load and electrical life expectancy. The life expectancy of output relays varies considerably with the output load and switching conditions.	
Tighten the terminal screws to the rated torque of between 0.74 and 0.90 N·m. Loose screws may occasionally result in fire.	
Set the parameters of the product so that they are suitable for the system being controlled. If they are not suitable, unexpected operation may occasionally result in property damage or accidents.	
A malfunction in the product may occasionally make control operations impossible or prevent alarm outputs, resulting in property damage. To maintain safety in the event of malfunction of the product, take appropriate safety measures, such as installing a monitoring device on a separate line.	
Do not allow pieces of metal or wire cuttings to get inside the USB-Serial Conversion Cable connector for the Support Software. Failure to do so may occasionally result in minor electric shock, fire, or damage to equipment.	
Do not allow dust and dirt to collect between the pins in the connector on the USB-Serial Conversion Cable. Failure to do so may occasionally result in fire.	

✻ A class 2 power supply is one tested and certified by UL as having the current and voltage of the secondary output restricted to specific levels.

Precautions for Safe Use

Be sure to observe the following precautions to prevent malfunction or adverse affects on the performance or functionality of the product. Not doing so may occasionally result in faulty operation.

1. This product is specifically designed for indoor use only. Do not use this product in the following places:
   - Places directly subject to heat radiated from heating equipment.
   - Places subject to splashing liquid or oil atmosphere.
   - Places subject to direct sunlight.
   - Places subject to dust or corrosive gas (in particular, sulfide gas and ammonia gas).
   - Places subject to intense temperature change.
   - Places subject to icing and condensation.
   - Places subject to vibration and large shocks.
2. Use and store the product within the rated ambient temperature and humidity.
   Gang-mounting two or more Temperature Controllers, or mounting Temperature Controllers above each other may cause heat to build up inside the Temperature Controllers, which will shorten their service life. In such a case, use forced cooling by fans or other means of air ventilation to cool down the Temperature Controllers.
3. To allow heat to escape, do not block the area around the product. Do not block the ventilation holes on the product.
4. Be sure to wire properly with correct polarity of terminals.
5. Use the specified size of crimp terminals for wiring (M3.5, width of 7.2 mm or less). For open-wired connections use stranded or solid copper wires with a gauge of AWG24 to AWG14 (equal to a cross-sectional area of 0.205 to 2.081 mm^2). (The stripping length is 5 to 6 mm.) Up to two wires of the same size and type or two crimp terminals can be connected to one terminal. Do not connect more than two wires or more than two crimp terminals to the same terminal.
6. Do not wire the terminals that are not used.
7. To avoid inductive noise, keep the wiring for the product's terminal block away from power cables carry high voltages or large currents. Also, do not wire power lines together with or parallel to product wiring. Using shielded cables and using separate conduits or ducts is recommended.
   Attach a surge suppressor or noise filter to peripheral devices that generate noise (in particular, motors, transformers, solenoids, magnetic coils, or other equipment that have an inductance component).
   When a noise filter is used at the power supply, first check the voltage or current, and attach the noise filter as close as possible to the product.
   Allow as much space as possible between the product and devices that generate powerful high frequencies (high-frequency welders, high-frequency sewing machines, etc.) or surge.
8. Use this product within the rated load and power supply.
9. Make sure that the rated voltage is attained within two seconds of turning ON the power using a switch or relay contact. If the voltage is applied gradually, the power may not be reset or output malfunctions may occur.
10. Make sure that the Temperature Controller has 30 minutes or more to warm up after turning ON the power before starting actual control operations to ensure the correct temperature display.
11. A switch or circuit breaker must be provided close to the product. The switch or circuit breaker must be within easy reach of the operator, and must be marked as a disconnecting means for this unit.
12. Do not use paint thinner or similar chemical to clean with. Use standard grade alcohol.
13. Design the system (e.g., control panel) considering the 2 seconds of delay that the product's output to be set after power ON.
14. The output may turn OFF when shifting to certain levels. Take this into consideration when performing control.
15. The number of non-volatile memory write operations is limited. Therefore, use RAM write mode when frequently overwriting data during communications or other operations.
16. Always touch a grounded piece of metal before touching the Temperature Controller to discharge static electricity from your body.

17. Control outputs (for driving SSR) that are voltage outputs are not isolated from the internal circuits. When using a grounded thermocouple, do not connect any of the control output terminals to ground. (Doing so may result in an unwanted circuit path, causing error in the measured temperature.)
18. Use suitable tools when taking the Temperature Controller apart for disposal. Sharp parts inside the Temperature Controller may cause injury.
19. Do not use the Temperature Controller if the front sheet is peeling off or torn.
20. Check the orientation of the connectors on the USB-Serial Conversion Cable before connecting the Cable. Do not force a connector if it does not connect smoothly. Using excessive force may damage the connector.
21. Do not place heavy object on the USB-Serial Conversion Cable, bend the cable past its natural bending radius, or pull on the cable with undue force.
22. Do not connect or disconnect the USB-Serial Conversion Cable while communications are in progress. Product faults or malfunction may occur.
23. Make sure that the Conversion Cable's metal components are not touching the external power terminals.
24. Do not touch the connectors on the USB-Serial Conversion Cable with wet hands. Electrical shock may result.
25. The computer may operate incorrectly. Do not rapidly and repeatedly insert and disconnect the USB connector on the USB-Serial Conversion Cable.
26. The personal computer requires time to recognize the cable connection after the USB connector is connected to the personal computer. This delay does not indicate failure. Check the COM port number before starting communications.
27. The USB-Serial Conversion Cable may malfunction. Do not connect to a personal computer through a USB hub.
28. For the power supply voltage input, use a commercial power supply with an AC input. Do not use the output from an inverter as the power supply. Depending on the output characteristics of the inverter, temperature increases in the product may cause smoke or fire damage even if the product has a specified output frequency of 50/60 Hz.
29. Make sure that the indicators on the Temperature Controller are operating properly. Depending on the application conditions, deterioration in the connectors and cable may be accelerated, and normal communications may become impossible. Perform periodic inspection and replacement.
30. When extending or connecting the thermocouple lead wire, be sure to use compensating wires that match the thermocouple types.
31. When extending or connecting the lead wire of the platinum resistance thermometer, be sure to use wires that have low resistance and keep the resistance of the three lead wires the same.
32. The USB-Serial Conversion Cable may malfunction. Do not extend the USB cable with an extension cable to connect to the personal computer.
33. Noise may enter on the USB-Serial Conversion Cable, possibly causing equipment malfunctions. Do not leave the USB-Serial Conversion Cable connected constantly to the equipment.

Precautions for Correct Use

Service Life

1. Use the product within the following temperature and humidity ranges:
   Temperature: –10 to 55°C (with no icing or condensation)
   Humidity: 25% to 85%
   If the product is installed inside a control board, the ambient temperature must be kept to under 55°C, including the temperature around the product.
2. The service life of electronic devices like Temperature Controllers is determined not only by the number of times the relay is switched but also by the service life of internal electronic components. Component service life is affected by the ambient temperature: the higher the temperature, the shorter the service life and, the lower the temperature, the longer the service life. Therefore, the service life can be extended by lowering the temperature of the Temperature Controller.
3. When two or more Temperature Controllers are mounted horizontally close to each other or vertically next to one another, the internal temperature will increase due to heat radiated by the Temperature Controllers and the service life will decrease. In such a case, use forced cooling by fans or other means of air ventilation to cool down the Temperature Controllers. When providing forced cooling, however, be careful not to cool down the terminals sections alone to avoid measurement errors.

Measurement Accuracy

1. Mount the product so that it is horizontally level.
2. If the measurement accuracy is low, check to see if input shift has been set correctly.

Waterproofing

The degree of protection is as shown below. Sections without any specification on their degree of protection or those with IP□0 are not waterproof.

Front panel: IP66
Rear case: IP20, Terminal section: IP00

Operating Precautions

1. It takes approximately two seconds for the outputs to turn ON from after the power supply is turned ON. Due consideration must be given to this time when incorporating Temperature Controllers in a sequence circuit.
2. When starting operation after the Temperature Controller has warmed up, turn OFF the power and then turn it ON again at the same time as turning ON power for the load. (Instead of turning the Temperature Controller OFF and ON again, switching from STOP mode to RUN mode can also be used.)
3. Avoid using the Controller in places near a radio, television set, or wireless installing. These devices can cause radio disturbances which adversely affect the performance of the Controller.
4. When complying with EMC standards, the cable connecting the sensor to the TC or Pt input must be 30 m or less. If the cable length exceeds 30 m, compliance with EMC standards will not be possible.

Mounting

Mounting to a Panel

For waterproof mounting, waterproof packing must be installed on the Controller. Waterproofing is not possible when group mounting several Controllers. Waterproof packing is not necessary when there is no need for the waterproofing function.

1. Insert the E5CB into the mounting hole in the panel.
2. Push the adapter from the terminals up to the panel, and temporarily fasten the E5CB.
3. Tighten the two fastening screws on the adapter. Alternately tighten the two screws little by little to maintain a balance. Tighten the screws to a torque of 0.29 to 0.39 N·m.

Precautions when Wiring

- Separate input leads and power lines in order to prevent external noise.
- Use AWG24 (cross-sectional area: 0.205 mm^2) to AWG14 (cross-sectional area: 2.081 mm^2) shielded twisted-pair cable.
- Use crimp terminals when wiring the terminals.
- Use the suitable wiring material and crimp tools for crimp terminals.
- Tighten the terminal screws to a torque of between 0.74 and 0.90 N·m.

Warranty and Application Considerations

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Disclaimers

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON *Warranty and Limitations of Liability.*

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

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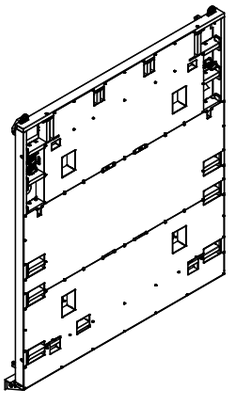
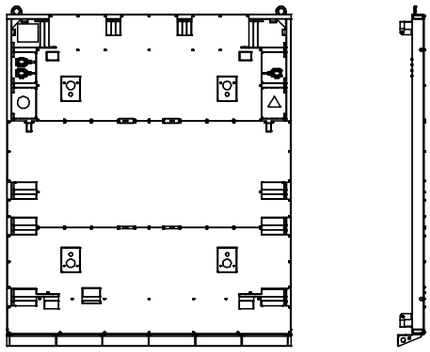
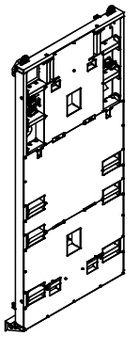
CSM_2_2_0911
Cat. No. H172-E1-01
Printed in Japan
1110

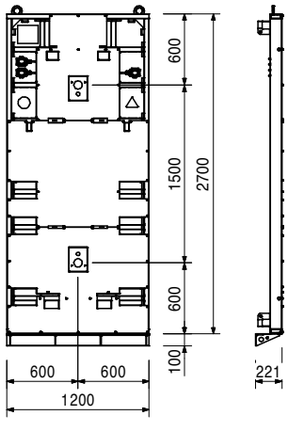
Item no.	Weight kg	
129132	233.000	**Heated Panel MXH 270 x 240** 6.480 m². Heated Panel for Panel MX 270 x 240.



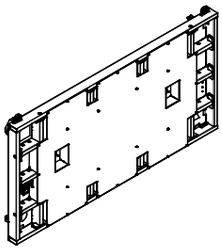


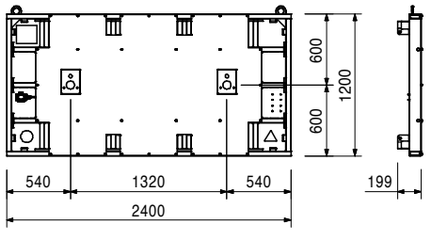
129133	147.000	**Heated Panel MXH 270 x 120** 3.240 m². Heated Panel for Panel MX 270 x 120.





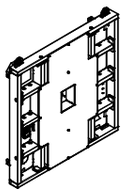
129370	119.000	**Extension Heated Panel MXH 120 x 240** 2.880 m². Extension Heated Panel MXH for Panel MX 120 x 240.

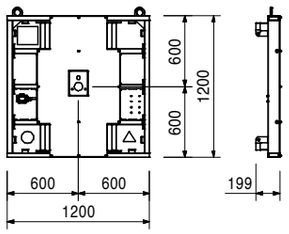




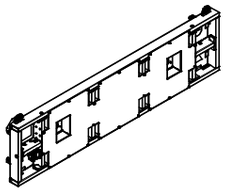
MXH Heated Formwork

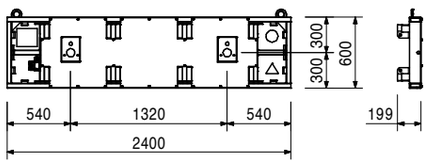
Item no.	Weight kg	
129375	73.400	**Extension Heated Panel MXH 120 x 120** 1.440 m². Extension Heated Panel MXH for Panel MX 120 x 120.



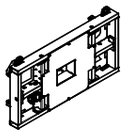


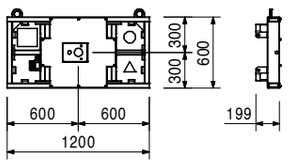
129134	72.400	**Extension Heated Panel MXH 60 x 240** 1.440 m². Extension Heated Panel MXH for Panel MX 60 x 240.



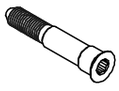


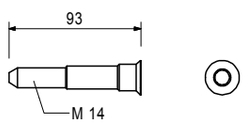
129135	44.000	**Extension Heated Panel MXH 60 x 120** 0.720 m². Extension Heated Panel MXH for Panel MX 120 x 60.



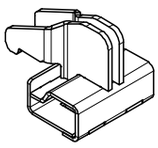


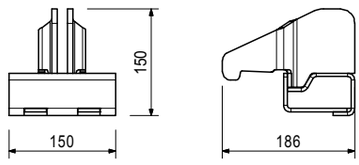
117990	0.132	**Fixing Bolt M14 MXH**



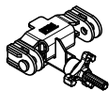


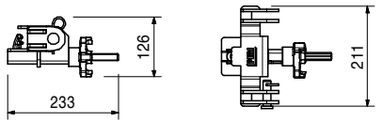
129139	3.440	**Adapter Connector MXH**



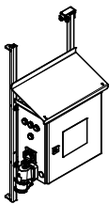


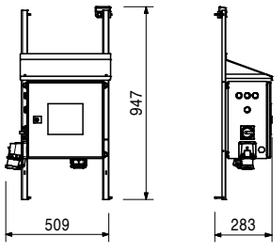
Item no.	Weight kg	
129136	3.260	**Connector RS MXH** For connecting push-pull props and kicker braces on MXH Panels.





129330	19.100	**Control Box MXH** **Complete with** 1 pc. 129137 Control Box Connector MXH **Note** Follow Instructions for Use!



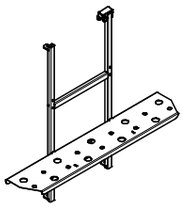


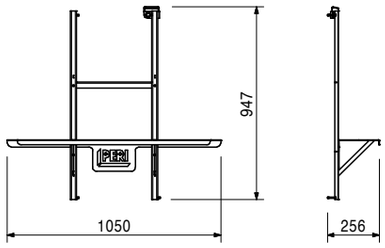
Accessories

129137	5.590	**Control Box Connector MXH**
128874	0.755	**Connector Cable MXH** Power supply cable for Control Box MXH to MXH Panel.

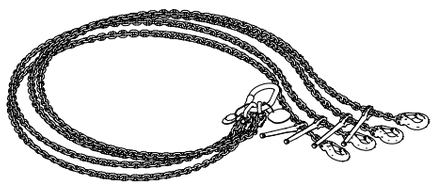
128875	0.450	**Connecting Cable MXH** Power supply cable for connection between MXH Panels and MXH Extension Heated Panels.

Item no.	Weight kg	
129141	8.440	**Tie Holder MXH** Parking position of MX Anchors on MXH Panels.

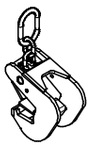


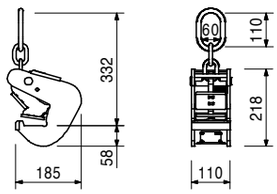


117321	31.000	**Lifting Gear Combi MX** For transporting stacks of MAXIMO and TRIO Panels. For attaching Lifting Hook MAXIMO 1.5 t and Stacking Device MAXIMO.	**Note** Follow Instructions for Use!

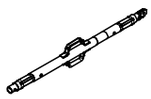


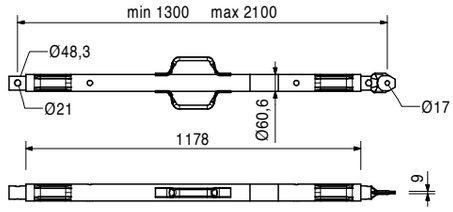
115168	7.460	**Lifting Hook MAXIMO 1.5 t** For transporting MAXIMO and TRIO Panels.	**Note** Follow Instructions for Use! **Technical Data** Permissible load-bearing capacity: Steel elements 1.5 t Alu elements 750 kg





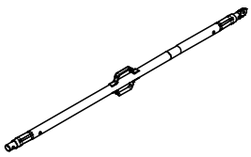
117466	10.600	**Push-Pull Prop RS 210, galv.** Extension length l = 1.30 – 2.10 m. For aligning PERI Formwork Systems and precast concrete elements.	**Note** Permissible load see PERI Design Tables.

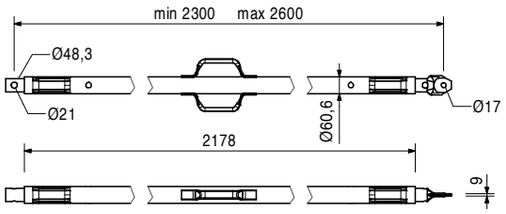




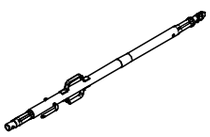
MXH Heated Formwork

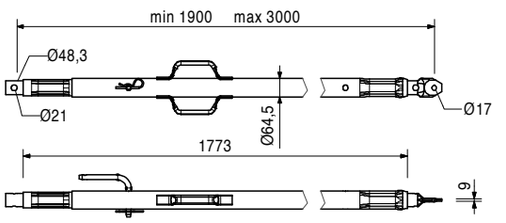
Item no.	Weight kg		
118238	12.100	**Push-Pull Prop RS 260, galv.** Extension length l = 2.30 – 2.60 m. For aligning PERI Formwork Systems and precast concrete elements.	**Note** Permissible load see PERI Design Tables.



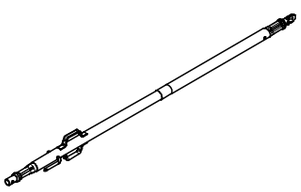


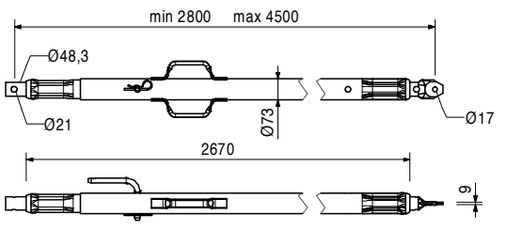
117467	15.500	**Push-Pull Prop RS 300, galv.** Extension length l = 1.90 – 3.00 m. For aligning PERI Formwork Systems and precast concrete elements.	**Note** Permissible load see PERI Design Tables.



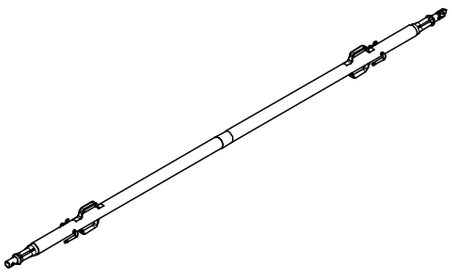


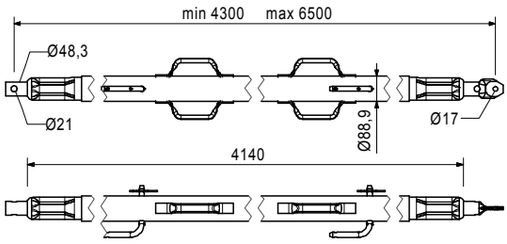
117468	23.000	**Push-Pull Prop RS 450, galv.** Extension length l = 2.80 – 4.50 m. For aligning PERI Formwork Systems and precast concrete elements.	**Note** Permissible load see PERI Design Tables.



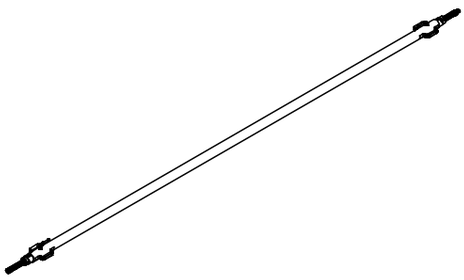


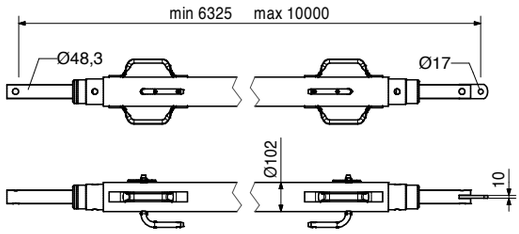
117469	39.900	**Push-Pull Prop RS 650, galv.** Extension length l = 4.30 – 6.50 m. For aligning PERI Formwork Systems and precast concrete elements.	**Note** Permissible load see PERI Design Tables.



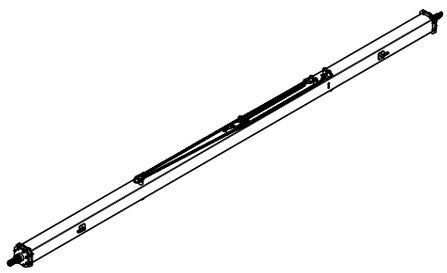


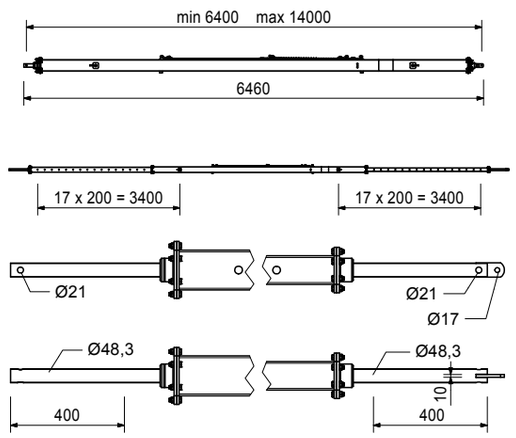
Item no.	Weight kg		
028990	115.000	**Push-Pull Prop RS 1000, galv.** Extension length l = 6.40 – 10.00 m. For aligning PERI Formwork Systems.	**Note** Permissible load see PERI Design Tables.



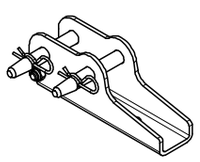


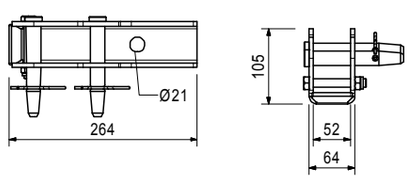
103800	271.000	**Push-Pull Prop RS 1400, galv.** Extension length l = 6.40 – 14.00 m. For aligning PERI Formwork Systems.	**Note** Permissible load see PERI Design Tables. Chain can be operated from bottom.





126666	3.070	**Base Plate-3 for RS 210 - 1400** For assembly of Push-Pull Props RS 210, 260, 300, 450, 650, 1000 and 1400.	**Complete with** 2 pc. 105400 Pin Ø 20 x 140, galv. 2 pc. 018060 Cotter Pin 4/1, galv. 1 pc. 113063 Bolt ISO 4014 M12 x 80-8.8, galv. 1 pc. 113064 Hex Nut ISO7042-M12-8-G, galv.

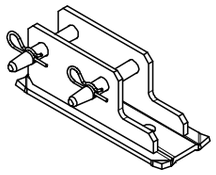


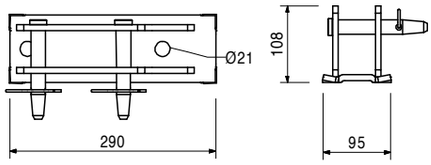


Accessories

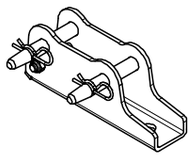
124777	0.210	**Anchor Bolt PERI 14/20 x 130**

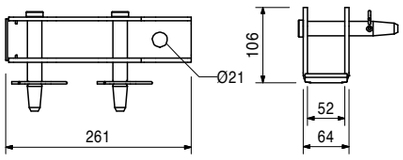
Item no.	Weight kg		
102018	4.880	**Base Plate-2 for RS 1000/1400, galv.** For assembly of Push-Pull Props RS 210, 260, 300, 450, 650, 1000, 1400 and Heavy Duty Spindles.	**Complete with** 2 pc. 105400 Pin Ø 20 x 140, galv. 2 pc. 018060 Cotter Pin 4/1, galv.





117343	3.250	**Base Plate-2 for RS 210 - 1400, galv.** For assembly of Push-Pull Props RS 210, 260, 300, 450, 650, 1000 and 1400.	**Complete with** 2 pc. 105400 Pin Ø 20 x 140, galv. 2 pc. 018060 Cotter Pin 4/1, galv.

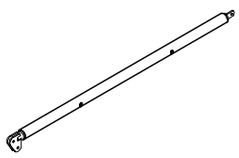


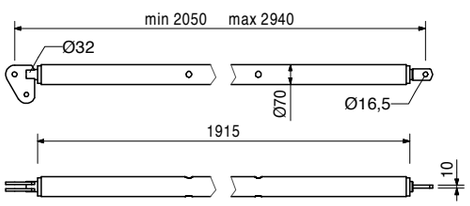


Accessories

124777	0.210	**Anchor Bolt PERI 14/20 x 130**

028010	17.900	**Push-Pull Prop RSS I** Extension length l = 2.05 – 2.94 m. For aligning PERI Formwork Systems.	**Note** Permissible load see PERI Design Tables.

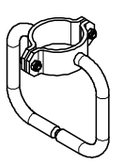


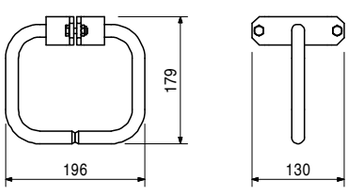


Accessories

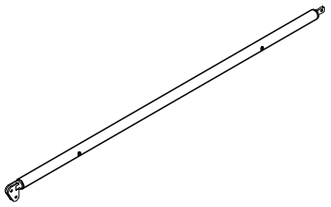
113397	1.600	**Spindle Handle RSS / AV**

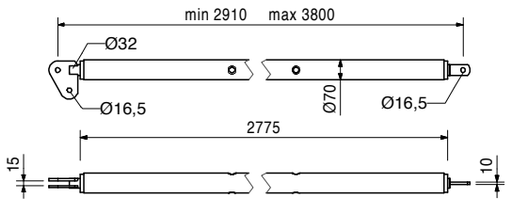
113397	1.600	**Spindle Handle RSS / AV** Spindle handle for screwing on Push-Pull-Props RSS I, RSS II and Kickers AV 210 and AV RSS III.	**Complete with** 2 pc. 722342 Screw ISO 4017 M8 x 25-8.8, galv. 2 pc. 711071 Nut ISO 7042 M8-8, galv.





Item no.	Weight kg		
028020	22.000	**Push-Pull Prop RSS II** Extension length l = 2.91 – 3.80 m. For aligning PERI Formwork Systems.	**Note** Permissible load see PERI Design Tables.

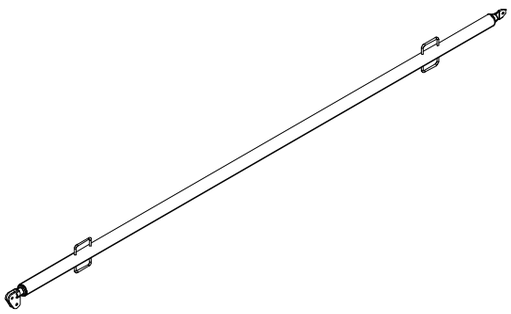


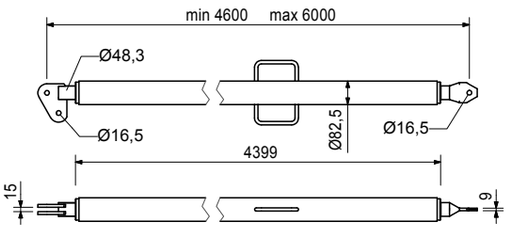


Accessories

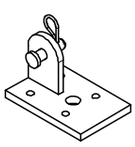
113397	1.600	**Spindle Handle RSS / AV**

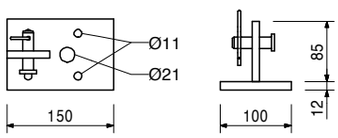
028030	38.400	**Push-Pull Prop RSS III** Extension length l = 4.60 – 6.00 m. For aligning PERI Formwork Systems.	**Note** Permissible load see PERI Design Tables.





106000	1.820	**Base Plate-2 for RSS, galv.** For assembly of Push-Pull Props RSS.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv.





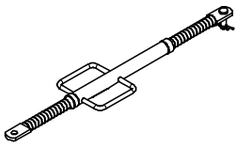
Accessories

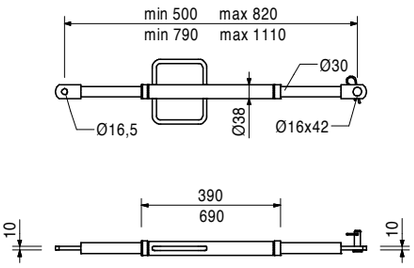
124777	0.210	**Anchor Bolt PERI 14/20 x 130**

Item no.	Weight kg		min. L	max. L
		Kicker AV		
057087	3.510	**Kicker AV 82**	500	820
057088	4.200	**Kicker AV 111**	790	1110

For aligning PERI Formwork Systems.

Complete with
1 pc. 027170 Pin Ø 16 x 42, galv.
1 pc. 018060 Cotter Pin 4/1, galv.
Note
Permissible load see PERI Design Tables.

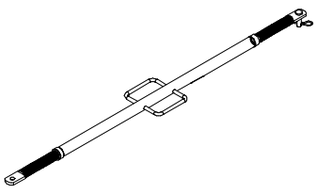


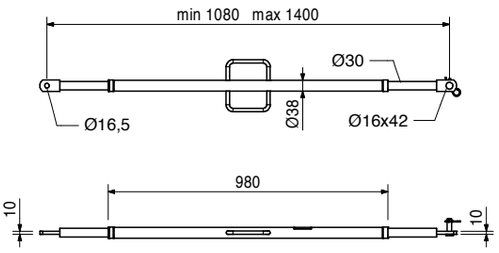


028110	4.850	**Kicker AV 140**

Extension length l = 1.08 – 1.40 m.
For aligning PERI Formwork Systems.

Complete with
1 pc. 027170 Pin Ø 16 x 42, galv.
1 pc. 018060 Cotter Pin 4/1, galv.
Note
Permissible load see PERI Design Tables.

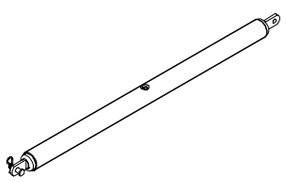


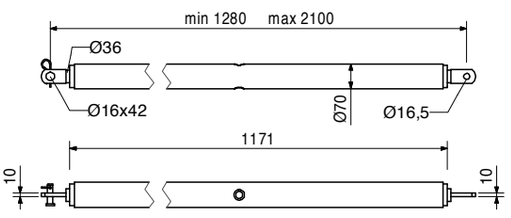


108135	12.900	**Kicker AV 210**

Extension length l = 1.28 – 2.10 m.
For aligning PERI Formwork Systems.

Complete with
1 pc. 027170 Pin Ø 16 x 42, galv.
1 pc. 018060 Cotter Pin 4/1, galv.
Note
Permissible load see PERI Design Tables.

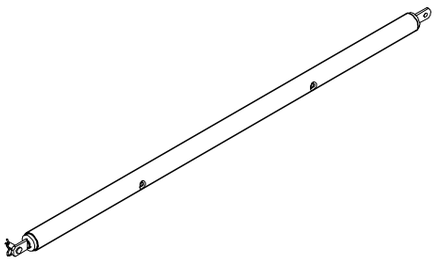


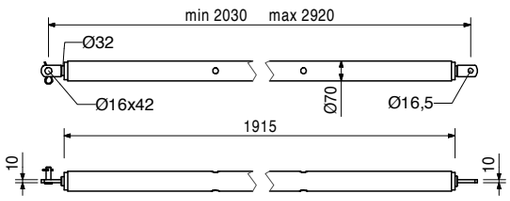


Accessories

113397	1.600	**Spindle Handle RSS / AV**

Item no.	Weight kg		
028120	17.000	**Kicker AV RSS III** Extension length l = 2.03 – 2.92 m. For aligning PERI Formwork Systems.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv. **Note** Permissible load see PERI Design Tables.

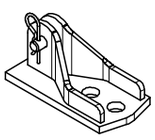


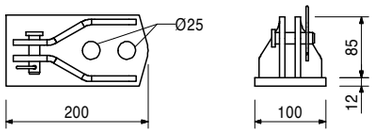


Accessories

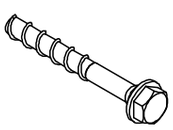
113397	1.600	**Spindle Handle RSS / AV**

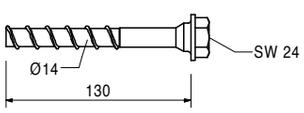
028080	2.970	**Connector Kicker/Push-Pull Prop, galv.** For connecting push-pull props and kicker braces to Main Beam HDT.	**Complete with** 1 pc. 027170 Pin Ø 16 x 42, galv. 1 pc. 018060 Cotter Pin 4/1, galv.



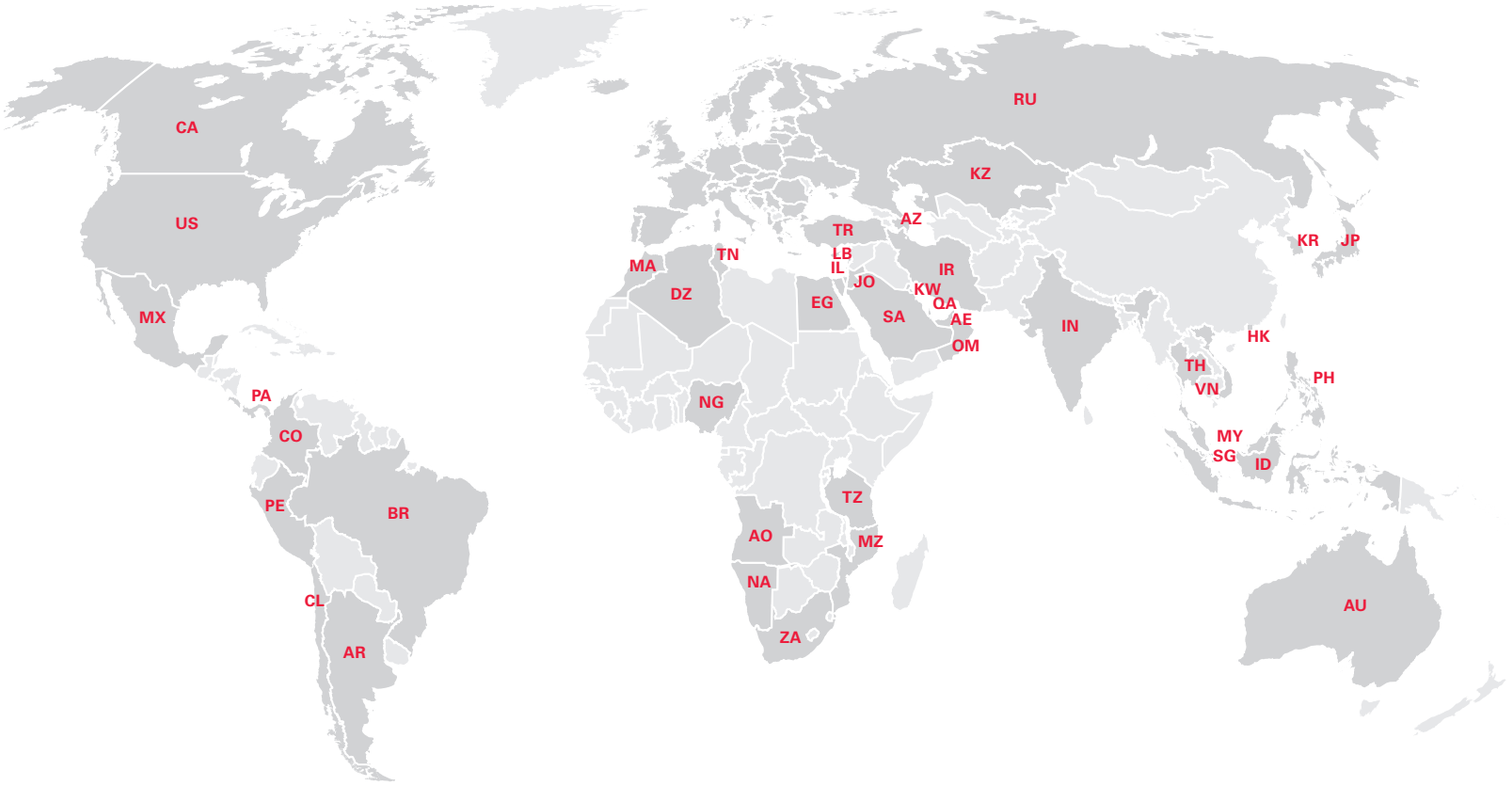


124777	0.210	**Anchor Bolt PERI 14/20 x 130** For temporary fixation to reinforced concrete structures.	**Note** See PERI Data Sheet! Drilling Ø 14 mm.





PERI International



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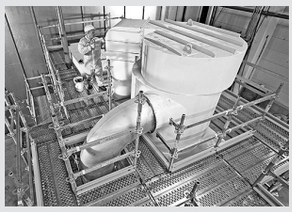
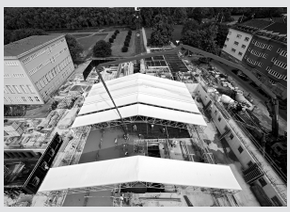


Industrial Scaffold

Access



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Safety Systems

System-Independent Accessories

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